1859 PUBLISHED WEEKLY 1918

AMERICAN GAS ENGINEERING JOURNAL

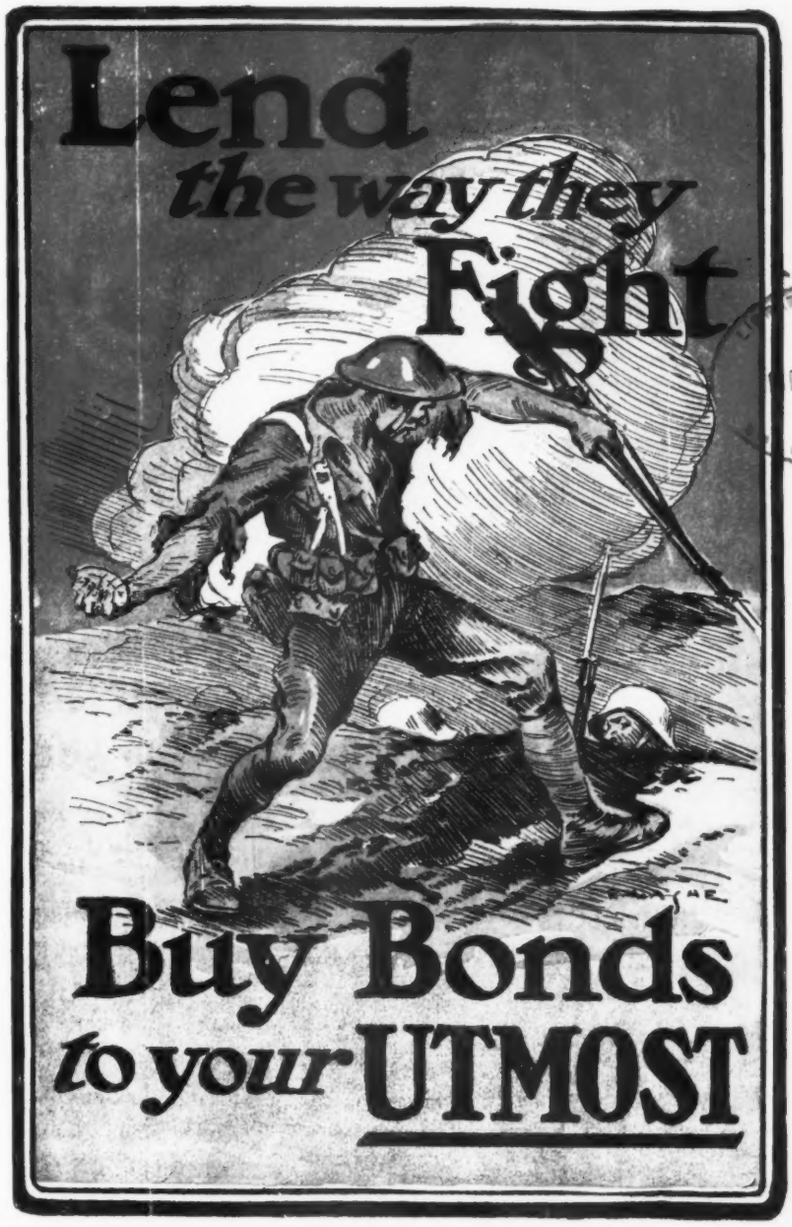
FORMERLY

AMERICAN GAS LIGHT JOURNAL

VOL. CIX., No. 13
WHOLE No. 3160

NEW YORK, SATURDAY, SEPTEMBER 28, 1918

Subscription $3 per year
$4 Canada $5 Foreign



LIBRARY OF CONGRESS
OCT 3 1918
SMITHSONIAN DEPOSIT

By Transfer
NOV 14 1918

THIS SPACE DONATED BY

American Gas Light Journal, Inc., 42 Pine St., New York

INDEX TO CONTENTS, PAGE 300 ADVERTISERS' INDEX, PAGE 20

The Gas Machinery Co.

Cleveland, Ohio

BY-PRODUCT COKE PLANTS

COAL GAS PLANTS **WATER GAS PLANTS**

AQUA, SULPHATE and CONCENTRATED AMMONIA PLANTS

NOTE:—

This advertisement is only to keep you reminded of the

U. G. I. Vertical Retorts

The best system of coal carbonization in America today

Figures prove this and the guarantees of

THE UNITED GAS IMPROVEMENT CO., Philadelphia

Back it up

Entered as second-class matter January 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

AMERICAN
GAS ENGINEERING JOURNAL

FORMERLY THE AMERICAN GAS LIGHT JOURNAL

Vol. CIX, No. 13 NEW YORK, SEPTEMBER 28, 1918 Whole No. 3160

LIBRARY OF CONGRESS
OCT 3 19

Function of Employment Bureau Not to Definitely Engage Anyone to Fill a Position, But to Secure Suitable Applicants, So Head of Department Can Make Best Selection

Women Have Been Found Competent as Meter Readers, Collectors and Drivers of Motor Cars With Which There Is Little Likelihood of Heavy Repairs

By RALPH ELSMAN

General Manager, Kings County Lighting Company, Brooklyn, N. Y.

Perhaps the most vital question that confronts public utilities, next to rates, is the labor problem. Daily this grows more acute, and unless drastic action is taken the situation threatens to almost overwhelm many companies and through this to cause more inconvenience to the public.

The solution of the problem requires many radical steps, perhaps the most startling of which is the use of female employees in many positions which heretofore have been considered solely as jobs that could be filled by men.

It is not only a question, however, of the substitution of women, but it is the question of securing the proper number of employees to maintain the organization at its efficient standard which is required under the present exacting war conditions.

A solution which has a great deal of logic as its underlying motive is the centralization of employment, or the establishment of an employment bureau. It should be the duty of this bureau to secure applications from the persons fitted to fulfill the needs of the different departments, and to have their applications constantly on file so that they can be reached in the shortest possible time. In addition to this, the department should make every effort to have alternates for every position of the company, so that at no time need the work be dispensed with.

Real Function of Employment Bureau

The function of the employment bureau is not to definitely engage anyone to fill a position, but is rather to secure suitable applicants for the various positions, so that the head of the department, who is naturally in closer touch with his requirements, will be able to make the best selection.

In this connection it is wise to have a certain definite form through which all applicants must pass so that there will be equality in the engaging. Thus a form of application should be filled out while they are still in the employment office. The length of time required to fill this out, the accuracy with which the questions are answered and the various data contained in the application must all enter into the question of whether the applicant is sufficiently alert to fulfill the needs of the various positions.

Having had this written application completed, and perhaps a short series of verbal questions answered, the logical step is then to turn the applicant, together with the application, over to the department head requiring the employee. In forwarding the application it is possible to also make such notations as the employment manager cares to make regarding the qualifications as observed. These notes frequently are accurate guides as to the qualifications of the applicant, and where the employment manager is trained in any way to observe human nature they will be of great value in guiding the line of questions asked by the department head.

Women in the Place of Men

The question of substituting women for men is still in the experimental stage, but thus far reports indicate that women are being successfully used as meter readers, as collectors and as chauffeurs. In the latter case, driving the company cars where there is no great danger of any heavy repairs being required.

Women collectors are found to be excellent workers for the reason that those who qualify for such a position are in most cases trained house-to-house canvassers, or women who have come in close contact with the world. Women, too, are more inclined to be diplomatic

than are men, and in cases of recalcitrant customers they will secure better results by their methods, in addition to the fact that few men care to enter into a dispute with a woman.

Of course the employment of women in outside positions is a matter that must be taken up in connection with local conditions, and also with the various parts of the territory served. Where this is carefully weighed, it will be found that many women can be used in positions heretofore considered solely within the bailiwick of men.

While these are experiments so far as the United States is concerned, nevertheless Great Britain has found that women have proven successful in many positions, and undoubtedly the conclusion of the world war will show a signal change in the attitude of the public utility industry toward women as being permanent, capable employees.

Women present a problem insofar as they are not always so permanent as are men, but this is offset by the fact that they are usually more adaptable and can be taught more quickly the routine of the various departments. In no wise should this article be considered as a scale in which the aptitude of women vs. men is being weighed, but rather as simply a statement of how some of the problems which are confronting us may be solved.

Electricity Will Not Replace Coal

Interesting Explanation of a Statement Which Has Caused Considerable Comment

On various occasions Arthur V. White, engineer for the Canadian Conservation Commission, has drawn public attention to the fact that the amount of heat in electrical energy does not afford an adequate substitute for coal in providing heat for the citizens of Canada.

In his article in *The Monetary Times* annual of Jan. 4, Mr. White stated: "Let it be appreciated that Canadians need never expect to have electrical energy replace coal and other fuel for heating purposes except to a relatively limited extent." This statement has caused considerable comment.

More recently, when addressing the important fuel conference held by municipalities in Galt on Feb. 11, Mr. White again emphasized his contention that, as a general proposition, electrical energy is most serviceably employed for strictly power purposes, while fuel, such as coal, oil, etc., is more profitably employed for heating. The underlying principles involved are so simple that they should be well understood and their force appreciated by all interested in the fuel problem. The following statement contributed by Mr. White will assist to make this subject clear:

Editor *The Monetary Times.*

SIR: Respecting my statement, "Let it be appreciated that Canadians need never expect to have electrical energy replace coal and other fuel for heating purposes except to a relatively limited extent," would briefly remark as follows:

Mechanical Equivalent of Heat

In order to determine what is technically termed the mechanical equivalent of heat, J. P. Joule, an Englishman, about 1850—and subsequently a number of other experimenters—ascertained the number of foot-pounds of energy required to raise 1 lb. of water 1 deg. Fahr. In their simplest form the experiments consist of confining a known quantity of water in an insulated vessel and transmitting to the water by means of agitated vanes—like a churn—the energy developed by a known weight falling through a given distance. Taking into consideration the results of various experiments, this equivalent may be taken at 778 foot-pounds. It may be stated, for example, that 778 lb. falling through 1 ft. will develop energy sufficient to raise 1 lb. of water 1 deg. Fahr. This heat unit is termed a British thermal unit, or B.t.u.

Now by definition, a horsepower is 33,000 foot-pounds per minute, or $33{,}000 \times 60$ foot-pounds per hour. If, therefore, we divide $33{,}000 \times 60$ by 778, we obtain 2,545 as the heat units derivable from 1 horsepower-hour of energy. Correspondingly, the heat units derivable from 1 kilowatt-hour are 3,412.

It makes no difference, of course, what prime agency has resulted in the development of the power. Consequently it may be stated that a horsepower-hour of electrical energy can only yield approximately 2,545 heat units.

Coal and Heat Units

Considering next coal, it may be stated that a fairly good grade of bituminous coal will average 13,500 heat units per pound. The amount of coal required to produce by means of steam plant 1 horsepower-hour varies greatly, depending upon the size of the plant, as well as the character and general efficiency of the whole powerhouse equipment. Central station, steam-electric, generating plants which operate during the twenty-four hours, obtain a greater efficiency from their fuel than do the individual plants ordinarily used in manufacturing establishments.

Considering central station plants, the coal consumption ranges all the way from about 1½ to 2 lb. per horsepower-hour for large installations of from 100,000 to 200,000 hp., up to 5 or 6 lb. per horsepower-hour for plants ranging in size, say, from 50 to 1,000 hp.

If, by way of illustration, we assume 4 lb. of coal per horsepower-hour, we then have $4 \times 13{,}500 = 54{,}000$ heat units in 4 lb. of coal. Now, in the form of power, this would only yield 2,545 heat units per horsepower-hour. So we have an efficiency of $2{,}545 \div 54{,}000$, or less than 5 per cent. If we assume 2 lb. of coal per horsepower-hour, we have less than 10 per cent efficiency.

The significance of the above facts must be evident. Thus, for example, if the 4,500,000 tons of anthracite coal imported yearly from the United States into Canada were used for the development of electrical energy, and this energy were then converted into heat—recoverable even on the basis of 100 per cent efficiency—th resulting heat would, under the most favorable conditions above indicated, be only an amount corresponding to the heat units in about half a million tons of coal. That is, 90 per cent of the heat in the original amount of coal would be lost. Based upon reasonable assumptions, Canada's share of Niagara power, if all possible were developed, would not provide for the fuel needs of the city of Toronto. If it is to be used wholesale, then electrical energy is more efficiently employed for power than for heating purposes. ARTHUR V. WHITE.

From *The Monetary Times,* Toronto, Canada.

With Big Proportion of Inexperienced Workers That Is Characteristic of Times Safety Work Is More Than Ever Imperative

H. W. Forster Tells How War Is Being Made Safer—Traces Parallel Between Safety Work In Army and In Industries

An interesting paper on "Safety and Warfare" was read before the National Safety Congress by H. W. Forster, Philadelphia, Pa., general manager Independence Bureau. In part Mr. Forster said:

"Before America entered the great war we had learned of the stupendous internal changes brought about in the nations engaged in a modern war. We knew, when it was evident that we must throw our weight into the balance against the arch foe of democracy, that unprecedented changes were due to take place in American home life and industry. We foresaw and we have since seen the withdrawal of great numbers of able-bodied men—to date approximately 3,000,000—from industries which never needed them as now. Their places have had to be taken by inexperienced workers, and inexperienced workers are a serious accident liability. We have seen the entrance of women into new fields of industry, and we feared the accident and health menaces of heavier and of new work. We have seen new processes, whole new industries, in fact, created, many of them of a chemical nature and accompanied by accident and industrial disease dangers of a serious character. We have seen industries speeded up to the point where past records of plant construction and of production seemed almost insignificant, and we know what effect speed has on the accident totals. We have seen congestion on our lines of transportation as never before, and congestion and accident go hand in hand.

The Toll of Increased Production

"The new and inherently hazardous industries have taken their toll of our workers. A nation cannot suddenly become a great producer of powder, high explosives and shells without the loss of a considerable number of lives. But the life loss and the injuries, by good operating practices and by the use of all available safeguards, have held down to a very moderate total, when the number of workers concerned is taken into account, and the safety of these industries is steadily being increased.

"In the old and normally hazardous industries it has been a common occurrence for accidents to increase, for a time at least, until extraordinary safety efforts could be made to meet the extraordinary conditions brought about by the war. But, generally speaking, accident prevention has stood the test of the war in splendid style. It has been a revelation to see how firm a hold accident prevention has taken in the past five years; how it has woven into the warp and woof of our industrial life; how, under stress and strain, it has not been allowed to fall by the wayside; how the prospect of new information and of renewed inspiration has drawn to this convention great members of busy representatives of extraordinarily busy organizations.

"Even more cheering is the prominence which safety has achieved in the new war industries, where speed of construction has been such a factor that nothing could be allowed to delay the building program. These industries all have safety departments as a part of their operating forces, and most of them have had good accident prevention judgment applied to the plans of their plants.

"Consider our shipbuilding industry. In this branch of national endeavor, where world records for speed of production are being made, systematic accident prevention is a part of the program.

"With the assistance of the National Safety Council the United States Government, since the outbreak of the war, has put into effect accident prevention in its arsenals and navy yards.

"The Government-controlled railroads are more vigorously than ever before putting forward the cause of safety. Ladies and gentlemen, the evidence is convincing that American industry is not too busy winning the war to bother with safety.

Safety on the Fighting Front

"The winning of the war requires two great armies—the fighting army and the industrial army. The functions of the industrial army are primarily food production, the manufacture of the munitions of war upon which our soldiers are dependent, the creation of the essentials of life other than direct munitions, and the transportation of men and materials on land and on sea. We have seen that safety is a vital factor in our industrial life under war conditions. Does it have any place in the fighting branch of the service?

"The parallel between accident prevention, as conducted by our most advanced industries and as practiced in our army, is startling.

"In the first place, the army subjects all entrants to a careful physical examination in order that the seriously defective and the objectionable may be eliminated. So does modern industry.

"The army places in positions where they can be useful those not up to the physical standard set for the fighting man. So industry places the sub-standard man where he can do useful duty and where he will not suffer harm.

"Training is the backbone of military efficiency. Our military authorities through intensive training are transforming ordinary men into extraordinary soldiers. Training is the backbone of industrial efficiency; our progressive industries, through careful training, make extraordinarily efficient workers out of ordinary men and women.

"The army throws effective and extensive safeguards around our soldiers as regards water, food, sanitation, communicable diseases and abstinence from alcohol. Modern industry does exactly the same thing.

"Safety devices are as much a part of modern warfare as of modern industry, and it is even more important that they be used. The gas mask is to the army what the respirator is to the gassy or dusty plant. The 'tin hat' is to the soldier what the legging is to the foundryman. The dugout is a safeguard quite as much as the shelter provided for the quarryman to safeguard him against blast.

No Enterprise Can Be Conducted Without Accidents

"Safe practices are as essential to the success and safety of the army as to the efficiency and safety of workers in industry. It has been found necessary in the army to work out the best, easiest and safest method of doing things to train the soldiers in safe practices, exactly as we are training our workers in the plants committed to effective accident prevention. The chance-taker in the army faces death needlessly, just as he does in the industrial plant.

"The morale of any army, that belief in a cause, pride in an organization and willingness to fight to the death, if need be, finds a parallel in the *esprit de corps* as regards safety which well-conducted industrial plants have created. Teamwork wins battles and teamwork produces unprecedented plant output.

"No enterprise can be conducted without accidents, no matter how extensive and effective the safeguarding measures may be. The risks run by the man who goes forth to battle for his country in the fields of Flanders exceeds that which his brother runs even in our most hazardous industries, but our army has the principles of safety so thoroughly in mind and has so vigorously and generally applied them that the business of fighting is by no means as dangerous as would appear to be the case at first glance. What is true of our army is also true of the other great armies, friend and foe alike. Would that safety ideas were as eagerly sought and as rapidly adopted in industry as in the army. In the army every officer is a safety engineer, every private a safety committee in active standing.

"Our army is not too busy winning the war to bother with safety. It would have no chance to be an important factor in the final victory, of which we are so certain, were it not committed vigorously to the application of safety principles as far as is consistent with the work in hand. A consideration of the importance that safety plays in the fighting army should be an inspiration to the industrial army in its accident prevention work.

"It has been approximately fifteen months since the first United States troops went overseas.

Necessary Sacrifice and Wanton Sacrifice

"Now, during these past fifteen months, while our army has lost 20,000 men, America has lost through accidents, here in the presumably safe home country, approximately 60,000 men, women and children—three times as many. Furthermore, while the American expeditionary forces have had approximately 20,000 men more or less seriously wounded in these same fifteen months, we have suffered here at home something like 300,000 serious accidents, many of which have crippled men and women for life.

The lives lost and the injuries suffered by our soldiers and sailors are their contribution to the most splendid cause ever espoused by a nation. The lives lost and the injuries suffered at home, almost without exception, are offered up, not on the altar of patriotic sacrifice but to ignorance and carelessness and criminal disregard of the sacredness of our lives and those of others. The sacrifices we are making on the seas and in Europe guarantee an era in which the sacredness of human life and liberty and justice will be recognized as never before; the accidents we are suffering at home add nothing to human advancement. The one is worthy of the finest traditions of the human race; the other is a blot on our Christianity and our intelligence.

"I do not want to leave this subject of the parallel between accident prevention in the fighting army and in the industrial army without saying a word regarding the credit which commonly belongs, and which, on an increasing scale, will belong to the industrial soldier. Modern war, based as it is on engineering and chemistry, requires that an unprecedented portion of the available man and woman power be placed in the industrial service in the industrial army is largely devoid of glamour, of ability to see the direct results of effort, of the stimulus that comes from effective co-operation, but driving rivets into a hull is just as important as feeding a machine gun with bullets; building a gun carriage is as essential as firing the gun on the battle line; digging coal as vital as tunneling in no man's land. Is not the farmer who raises food comparable to the man in the Quartermaster's Department who handles the food at home and abroad? Is not the man who puts the engines into a ship serving quite as well as the engineer officer who drives the ship across the ocean? Is not the mechanic who assembles a locomotive as much a patriot as he who runs it over the railroads of France and Belgium? Is not the worker who is steadily on the job, putting his best efforts into his work, serving exactly in the same spirit as the soldier who does cheerfully and well the work required of him? And when it comes to facing death, I see no difference in the sacrificial spirit of the men who fight a fire that jeopardizes a plant making high explosives and those who sail the wintry seas seeking to blast out of the deep with those same explosives the outlawed submarines.

Where the Accident Hurts Most

"The war will be won by our side, but the war is not yet won. Every nerve must be strained by the members of our two great armies—the fighting army and the industrial army. Every man and woman must do his and her part. That part cannot be played by the citizen who is put out of the fight by accident.

"Of all the great conservation movements upon which our nation has embarked to win the war, the conservation of life and limb is the greatest. Let us then, with renewed vigor and with renewed spirit of consecration, support the safety movement, for by so doing we will render a not inconsiderable aid to the greatest safety ideal yet conceived, an ideal toward which a large portion of the world is struggling—the making of the world safe for democracy."

Discusses Various Manual Resuscitation Methods

H. B. Harmer Considers Prone Pressure Method Most Practical—Describes Manner In Which It Is Practiced

Every man should know how to render first aid to a person who has been rendered unconscious from contact with electric current, inhalation of gases, fumes and vapors, drowning and traumatic shock.

When a man becomes unconscious from electric shock the lungs slowly collapse within the normal diameter of the chest cavity, and remain collapsed, thereby preventing the air in a great measure from reaching the air cells, and thus changing the pressures in the chest cavity, at the same time preventing the restoration of a falling circulation and increasing blood pressure.

Asphyxiation from gas fumes, smoke, etc., is caused by the avidity of carbon monoxide for the hemoglobin (the red coloring matter of the blood), which has an attraction approximately 250 times as strong. Hence when the corpuscles in the blood are saturated with carbon monoxide they cannot carry oxygen from the lungs to the tissues, according to Haldene. Carbon monoxide has no other effect than that resulting from its interference with the oxygen supply of the tissues.

Unconsciousness in drowning is caused by asphyxia due to the accumulation of carbon dioxide in the blood and lungs depriving the vital brain centers of oxygen.

A traumatic shock, a blow on the head, jaw or neck, or over the solar plexis may paralyze the diaphragm. A man who gets such a knockout blow must be made to breathe until his disturbed nerve centers recover their normal functions.

Resuscitation methods are not difficult to learn. If you know them you may be able to save someone's life in case the emergency arises. While there are a number of methods in use, the Schaeffer or prone pressure method of resuscitation is generally conceded as the most practical method, and is recommended by the commission of experts who investigated the matter some years ago.

The Prone Pressure Application

When applying prone pressure method of resuscitation observe the following points:

1. Do not get excited.
2. Lose no time in starting treatment, as every moment of delay is serious.
3. Do not pick out a place to carry the patient to, but start treatment wherever the accident happens.
4. Place the patient directly on his stomach with the face turned to one side so that the mouth does not touch the ground. Extend the arms above the head, as this helps to expand the lungs.

With the patient flat upon his stomach the tongue falls forward of its own weight, which helps to clear the air passages of any obstructions, allowing a discharge of saliva, mucus, tobacco, blood, vomitos, etc., by gravity.

5. Open the mouth and by a stroke of the finger used as a scoop see that it is cleared of false teeth, tobacco, chewing gum, etc.
6. The tongue should be pulled forward and a wedge placed between the teeth.
7. Use a piece of wood or a penknife wrapped with a handkerchief, hold the tongue out with the thumb and forefinger or a strip of handkerchief hooked around it and the lower jaw and tied around the neck.
8. Kneel over the body of the patient, straddling the thighs and facing the patient's head, and feel for the floating ribs by first locating the bones of the hips and pelvis. (The floating ribs are but one or two finger breadths above the crest of the pelvis bone.)
9. Make pressure on or over the floating ribs (eleventh or twelfth), as making pressure on the free ends of these ribs is the prime consideration. When you make pressure on these free ribs the nearer the end you make the pressure the more leverage you have; their elasticity causes them to rebound to their normal position. This pressure pushes the stomach, spleen and liver upwards against the diaphragm (a partition wall; an arched muscular partition separating the thorax from the abdomen, forming the floor of the heart and lungs and the roof for the stomach, spleen, liver, intestines and other organs), and compresses and empties the lungs. As the pressure is relaxed the displaced organs fall back into their normal position, the diaphragm descends, and as there is a partial vacuum in the lungs air rushes into the lungs as in normal breathing.

The fingers of the operator should be nearly out of sight if the hands are placed properly. The thumb should be nearly parallel with the fingers, and the heels of the hands should rest on the lowest rib.

10. If possible bare the back of the patient, as you can locate the ribs more easily this way. (Tear off the shirt and clothing.)
11. Hold your arms straight from the body and bring the weight of the body forward from the hips and shoulders, thus making the pressure on the ribs of the patient. Use your body as a lever, gradually increasing the pressure on the ribs until the end of three seconds, or when the force exerted seems heavy enough to compress the parts, then suddenly remove the pressure entirely.
12. To make sure that a current of air is passing into and out of the lungs have a piece of cotton, tissue paper or any other light substance held in front of the mouth and nostrils of the patient, and this will indicate each inhalation and each exhalation.
13. Care should be taken that too much pressure is not exerted, as a very heavy man working on a light body may cause an injury.
14. If the operator pays attention and keeps cool he can feel the ribs give and spring back into place again.

Normally we breathe fifteen to eighteen times a minute. One complete respiration in artificial resuscitation should take four seconds (pressure and release). If someone is present get them to keep count, using a watch as a guide, or if you are alone your own deep, regular breathing will answer.

Do not get discouraged as maybe twenty-five or thirty minutes will elapse before there is any evidence of life, such as murmuring, groaning or movements of any kind. Above all, keep at it and persist, and do not

stand idly around waiting for a doctor. When the doctor does come he can tell if there is any heart action. The pulse may stop, but the heart may still be beating. The doctor can help by giving the patient a hypodermic injection of strychnine, digitalin, etc. Do not stop when the doctor arrives, it oftimes happens that everyone stands aside to hear what he has to say. This should not be done, but prone pressure movements should be kept going right along. If the doctor should pronounce the patient dead, and only a short time has elapsed between the accident and the arrival of the doctor, nevertheless keep at it and see to it that artificial respiration is kept up on the way to the hospital.

If there is more than one man around, let the second man get some aromatic spirits of ammonia and saturate a piece of cotton with it and keep it near the patient's nose. Brush back and forth; this also will brush away the devitalized air. If there is no aromatic spirits of ammonia handy, use spirits of camphor or spirits of menthol. Give no liquids or stimulants while the patient is unconscious, as liquids given under this condition will reach the lungs rather than the stomach.

Let the third man start to loosen the clothing and rub the hands, wrists and forearms towards the heart.

Have some cold water sprinkled on the face of the patient.

Let another man secure blankets, hot water bottles, or bottles filled with hot water.

As your patient begins to recover he will make spasmodic gasps or attempts at breathing; his lips will change from slate blue to white, then pinkish, and then his pulse comes back.

Allow him to do his own breathing as soon as he will, being ready to aid him if he again ceases to breathe.

When he becomes conscious give him aromatic spirits of ammonia, teaspoonful in a half glass of water, and then hot drinks of coffee or hot soup at intervals. Hot water bottles and blankets should be placed around him, as all the treatment requires after he revives or breathes is warmth and rest.

The Sylvester Method

Lay the patient on his back, with a roll of clothing or a pillow under the shoulders. Grasp the tip of the tongue and pull it well forward out of the mouth, fix it here by tying a handkerchief under the tongue and tie around the back of the neck, or an elastic band placed around the tongue and chin to keep the tongue in place.

Kneel at the patient's head, grasp his arms just below the elbows and lean forward, press them downward across on the chest. It is important to get this expiration first in order to as far as possible free the lungs before causing an intake of air. Now, with a slight push on the chest shift your weight on the knees, bring the patient's arms slowly outward and up over his head, turning his palms up as you do so. Hold this position, pulling on the arms until you count four. This expands the chest. To relax the pull bend the elbows, shift your weight forward, again cross the arms and press them firmly down on the chest. Continue if necessary for one to two hours.

Howard's Method

The patient is laid flat on his back with a roll of clothing under his shoulders thick enough to allow his head to fall back. His hands are tied together over his head. Kneel beside or astride his hips, place your hands on the lower ribs, with the fingers spread out over the ribs and the thumb in the pit of the stomach.

Press inward, backward and upward, at the same time throwing your weight on your hands. With a gentle push release your pressure, throwing your weight back on your knees and heels.

Hall's Method

Lay the patient on one side, roll him onto his chest, under which you have placed a roll of clothing or a blanket, then roll him upon his back, and repeat.

Sattherwaite's Method

Place the patient on his back with his mouth held open by a gag or a handkerchief; kneel at his right side, place the left forefinger hooked back of the tongue, the right hand spread out presses on his upper abdomen, pressing backward and toward the patient's head gently and gradually until you can press no more air out, then release, repeating three or four times a minute at first, then increasing to sixteen times a minute until the patient breathes. Gentle traction on the tongue on inspiratory movement is an aid.

It is in order to bring oxygen into the lungs, restore circulation, restore the action of the thorax, raise the coronary blood pressure and restore respiration that we use artificial resuscitation. The oxygenated blood must be carried to the respiratory, circulatory and brain centers, and must be of sufficient amount to maintain the cells of the brain. The oxygen forms a chemical union with certain elements of the blood (haemoglobin).

By spirometer methods for accurate determination of volume of air removed, the old Sylvester-Labrode method was reported to have an efficiency of 175 c.c. of air volume expired, against 520 c.c. of air expelled by the Schaeffer method; making pressure twelve times a minute by the prone pressure method gives us 6,240 c.c. of air expired, affording more volume of air per minute than in normal breathing.

Professor Yandell Henderson says, furthermore, it was found on animals in respiratory failure induced by an excess of chloroform that the amount of air as measured by spirometer connected with the trachea and recording on a smoked drum which can be drawn in and out of the chest by manipulation of the forelimbs and the squeezing of the chest and abdomen gradually decreases as the muscles of the body lose their tonus. At first, and while the tonus or elasticity of the muscle is still high, soon after spontaneous breathing has ceased a very considerable movement of the spirometer can be induced. But after ten or fifteen minutes, when the body has become entirely flaccid, only a quite negligible movement of air in and out of the chest results, even from the most vigorous stretching and compression.

Dr. Meltzer found that in dogs after obolition of muscular tonus by means of curare, the Sylvester method supplied a respiration sufficient to maintain the heart beat for only twelve minutes, while with the Schaeffer method the shortest time was eighteen minutes and the longest thirty-one minutes. With no treatment whatever the heart would have continued to beat eight to ten minutes.

The most scientific point in this connection, however,

is the fact that from the moment when spontaneous respiration ceases, whether by drowning, electric shock, excess of anesthesia, gas poisoning or any other form of asphyxia, the probability of restoration by any method grows rapidly less as the minutes pass. The resuscitation commission, after considering the matter in the light of such evidence as is available, concluded that probably ten minutes is the extreme limit of time beyond which restoration is practically impossible.

I have a strong impression that during the first minute after the cessation of breathing the administration of manual artificial restoration is more effective than by means of pump or bellows, the reason apparently being that a slight assistance is given to the heart and circulation by the manual method which is not afforded by mere changes of air pressure in the lungs.

Certainly both in the laboratory and operating room in a great majority of cases the immediate application of manual artificial respiration is effective in restoring breathing. On the other hand, a delay of even two or three minutes has usually resulted in the failure of the efforts applied thereafter, and after five minutes of the cessation of spontaneous breathing the subsequent efforts have never been successful.

Relative to Apparatus

Even in the unusual case in which the apparatus arrives and is applied in six or eight minutes, the chances of resuscitation are not nearly so good as they would be if the prone pressure manual method had been begun within thirty seconds after the accident. As a means of partially counteracting the tendency to exaggerate the value of apparatus, the Bureau of Mines recommends that the directions that go with every piece of apparatus should include the description that is given in Mine Circular No. 8, and that there should be printed on the outside of the case containing the apparatus in prominent characters words to the following effect:

If spontaneous breathing has ceased and this apparatus is not already on the spot administer artificial respiration by manual methods without the loss of a moment, and continue to do so until the apparatus is brought. Otherwise life will be extinct before the apparatus arrives.

Except to remove the patient from a locality containing irrespirable gases never carry him to the apparatus—he will be dead before he gets there.

*Storing Coal

Storing coal is not a complicated engineering problem. If storage houses are in existence in or around your plant, very good. If there are no storage bins it does little harm to pile the coal directly onto the ground. The coal will slack to some extent, but its heat value will not be impaired appreciably, and in these days of forced draft, chain grate stokers, and greater knowledge of boiler plant operation the slack coal can be fired about as well as lump coal.

One thing that should be guarded against in the piling or binning of soft coal is to refrain from piling it too deep. If too great pressure is brought to bear upon the bottom coal, or if conditions are not made right, spantaneous combustion is liable to occur and the entire supply may be lost. Storing under water is a method that has come into vogue during the past years, and it is a good method where a plant is equipped for it. The coal does not slack, does not lose in heat value, and there is absolutely no danger of spontaneous combustion. Unless the storage period is greater than one year, however, there is usually little reason why this method should be adopted.

Anthracite coal is not subject to spontaneous combustion, and can therefore be piled to any desired height. Bituminous coal, on the other hand, should not be piled to a greater depth than 10 or 12 ft., according to the Bureau of Mines. This bureau also suggests that the storing of screened nut coal is preferable. Dust should be kept out as much as possible. The handling should be reduced to the minimum. It should be so piled that the lumps and the fine coal are distributed as evenly as possible. Lumps should not be allowed to roll to the bottom, thus forming air passages. After two months the entire pile should be rehandled and screened. The pile should not be placed near external sources of heat, even though the heat transmitted be moderate. Six weeks' seasoning should be allowed after mining before storing or piling. Alternate wetting and drying should be avoided. Air transmission to the pile should be avoided, such as through interstices around foreign objects, brickwork, etc., or through porous bottoms, such as through coarse cinder. And the coal stored should not be ventilated with pipes, as more harm may be done in that way than good. Pulverized coal is coming into more general use, and the day may come when the blowing into the furnace of pulverized coal will supplant all other methods of stoking. One of the great objections to pulverized coal, though, is that it ignites spontaneously very easily. Four days is about the maximum length that should be allowed for dry pulverized coal. It should be kept in motion as much as possible. For these reasons it is best to pulverize the coal as rapidly as it is being used, keeping but a small supply in reserve in advance of consumption.

*Copyright, 1918, by W. F. Schaphorst.

The Carbonization and Distillation of Peat

Messrs. C. Galaine and C. Houlbert recently submitted a paper to the Paris Academie des Sciences on the carbonization and distillation of peat, sawdust, household refuse and other light organic products.

The value of peat lies in the direction of distillation rather than combustion, and on these lines it could supersede wood in the production of acetic acid, methylated spirit, ammonia and tar, the basis of so many dyes.

In the process of distillation peat, being a light material, requires larger retorts than coal, and of a design which facilitates the transmission of heat from the surface towards the center. Experiments have shown that revolving retorts produce the best results. The apparatus devised and described by the authors is on the principle of the roasting appliances used for coffee, chicory, etc., but, of course, with the addition of a receiver for collecting the distillated vapor, the great object being to provide an apparatus complete in itself for continuous and all-round operation.

This apparatus consists of six cylindrical retorts, each mounted on its own axis and capable of uniform rotation, while the individual cylinders are arranged in radial relation to a rotary central pivot, so that the retorts charged with peat can be entered into and with-

drawn from a stationary semicircular furnace in succession.

When the apparatus is in operation there are always three retorts undergoing distillation in the furnace, the other three being outside—one condensing, another emptying and the third recharging. The distillation takes on an average about forty minutes for retorts holding a ton of peat and making six revolutions per minute.

To enable the gas arising from the carbonized peat to pass out of the retorts, the hollow shaft of each is perforated so as to provide a passage from the inside of the retort to a collecting chamber in the axis of the pivot, and thence to the stills for fractional distillations.

The rotary movement of the retorts ensures rapid transmission of heat from the furnace, and as this heat acts on a very large surface, the peat is uniformly carbonized in a short time at a relatively low temperature, a result which, it is claimed, is impossible to obtain by any other process.

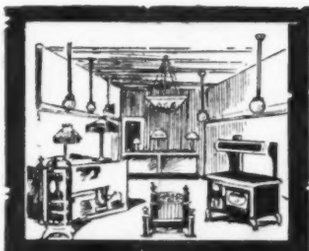
Flame Radiation

A time such as the present, when experts are gathering together, or are premeditating to do so, in order that some defined policy in regard to the constituents of gas may be laid down for future guidance, is opportune for the ventilation of many problems of interest alike to producer and consumer. In dealing with the matter in the past, we have held to the belief that efficiency is to be obtained not necessarily by the provision of a gas having a high calorific power, but by a mixture having the ability to yield a high calorific intensity. We return to the subject once more in view of the interesting light which is shed upon it in the monograph on "Coal and Its Scientific Uses," which has recently been published by Prof. William A. Bone. The opinion is expressed that, so far as large power or furnace installations are concerned, calorific value is by no means the only factor to be considered. There has, in fact, been too great a tendency to regard this property as of paramount importance, to the exclusion of such factors as density, the range of explosibility, and the radiative power of the flame. It is not sufficiently well understood by consumers who employ gas for heating purposes that a certain portion of the energy developed by the combustion of gas for heating purposes is directly radiated away (the proportion varying from 12 to 18 per cent in the case of an ordinary bunsen burner), and this quantity does not, therefore, make its appearance as sensible heat or in the actual flame temperature. The point to be noticed, however, is that susceptibility towards radiation is dependent upon the relative proportions of hydrogen and carbon monoxide in the mixture. For instance, a German investigator has shown that whereas a hydrogen flame radiates 3 per cent of its energy, a carbon monoxide flame reaches a figure of 8 per cent of the total heat of combustion. Thus, a carbon monoxide flame has a radiating power equal to about two and one-half times that of a hydrogen flame of similar size. As Professor Bone remarks, the bearing of such considerations upon everyday practice will at once be conceded by anyone who appreciates the importance of radiation in ordinary furnace operations. It has, in fact, been known for many years to those accustomed to work with open-hearth steel furnaces that a producer gas rich in carbon monoxide, but with a low hydrogen content, is a better fuel for such purposes than one of equal calorific value in which the relative proportions of the two constituents are reversed. The point is one which is not only of importance in making a decision as to the policy of the future, but it comes into the reckoning when consideration is given to the ordinary retort bench producer. At any rate, so far as ordinary town's gas is concerned, it is a factor which may prove of assistance in dealing with those squeamish individuals who are still sufficiently old-fashioned to condemn the presence of carbon monoxide because of its toxic properties.—*Gas World.*

Gas Managers' Salaries

Gas managers occupy a position in which they are very much at the mercy of directors or committees in the matter of recompense; and, to the disgrace of the industry, a considerable number of undertakings have chief officers who are ill-paid for the responsibility they have to shoulder. If there was ever a time when good salaries should be paid, it is the present, with all its wear and tear upon officials. In the reconstruction work of the industry, the condition of inadequate salaries is a point that should be looked into; for responsibilities have become greater, and the industry must offer prospects that will attract to it men of brains and high qualifications. Without them, however good the policy framed for the future, there will be little chance of its being universally carried through. Some directors and committee men think that technical qualification only merits something little better than a laborer's wage, which is an excellent certificate of their own want of efficiency for administrative duties, of perspicacity, and of appreciation of what is just. However, there are many engineers and managers who are now laboring with very inadequate salaries; and some of them have had no change made in them, despite the fact that for them, as for the workers under them, the whole costs of existence have undergone substantial change for the worse.

A reason why gas engineers and managers are themselves to blame for inadequate salaries is that they have appraised their own value at too low a point, and have pandered to the parsimonious spirit that largely pervades and controls some boards of directors and gas committees. Had there not been qualified men who were quite willing to accept office at a low salary, there would have been less heard now as to inadequate salaries; for niggardly boards and committees would then only have been able to get unqualified men at low remuneration, and these they would have been glad enough to get rid of when they found out that want of qualification and low salary had put their undertakings on the high road to disaster. As things are in the gas industry, we see nothing for it but individual action to obtain increased salary, till there is established and fully recognized some sufficient test of qualification, and for those who pass the test to refuse to accept office at salaries below a definite scale based upon output. Such a scale now would have to be pitched higher than it would have been before the war. Responsibilities and duties have grown out of all semblance with those of the past, and the war has raised, and will continue to affect for some time to come, the costs of existence and the obligations of every one of us.—*Gas Journal.*



MERCHANDISING GAS

Gas Ranges for Canning Efficiency

"Can all the fruits and vegetables you can; and can the Kaiser, too," says one of the recent food conservation posters. In the present turmoil, when everyone is bending his and her energies to the winning of the war, efficiency is more to be desired than ever, and Kann's, Washington, D. C., has brought out the idea very effectively that the use of a gas range conserves time and energy, and is more economical than coal or wood. They show a section of a modern kitchen, on the back wall of which is a large poster:

FEED YOURSELF

Somebody has to raise or pack everything you eat. Do your share. Can your own fruits and vegetables. Do it the efficient way—THE GAS WAY.

In the foreground was a kitchen table with enamel top. Near it stood a young housewife in big white apron, fork in hand, taking corn from a jar. On the table were all the implements of the canning art—funnel, strainer, aluminum pitcher, cup and measuring spoons—together with several jars of vegetables. At one side was a big gas range, enameled blue, on which were a number of aluminum vessels, while card advised:

GAS RANGE IDEAL FOR THE WORK OF THE CANNING SEASON

Can all you can, of course—but do it in comfort. You can accomplish twice as much if you work in a comfortable room, to say nothing of the saving in energy and strength. No replenishing of the fuel and back-breaking shoveling of coal or wood—a simple turn of the gas cock and your heat is ready. Get a gas range on easy payments and cook THE GAS WAY.

Series of C. E-Z. Adplates Offered Gas Companies by Welsbach Company

The Welsbach Company, of Gloucester, N. J., has completed a series of C. E-Z. campaign ads which they are about to offer gas companies throughout the country to be used in their fall and winter campaign. The series consist of eight page and half-page ads, based largely on the conservation of coal and oil. The service in connection with these ad plates will be furnished free to gas companies by the Welsbach Company. Four of these ads are reproduced.

Get After
The Wasteful Flat Flame
It's A Big Coal Eater
Use The "C.E-Z"
It Saves Coal
THE Government says: "Burn gas in mantles, not in flat-flame burners. The old-fashioned flat-flame burner uses more gas and gives less light."
THE Governmtent appeals to you to save coal by stopping the waste of gas. To co-operate with this effort, we will, for a limited time, send our representatives to call on all our customers, to offer and install on easy terms, the
The Coal Saver
"C.E-Z" Gas Light
REG. U.S. PAT. OFF.
The Coal-saving Mantle Light
It takes coal to make gas. Coal is not plentiful; there is none to waste. Wasted gas means wasted coal. The gas now used for flat-flame lighting would last twice as long, and more than a million tons of coal would be saved each year, if all the flat-flames in the country were replaced by the Welsbach "C.E-Z." And with half the gas the "C.E-Z" gives three times the light. It is the most modern Welsbach for home lighting. It is self-lighting, gives a powerful semi-indirect light, costs little to use. Its mantles are small, cost little, and last long.
Combine Patriotism and Personal Profit
By Installing a "C.E-Z" Light at Once
SPECIAL CAMPAIGN OFFER 60c WITH YOUR NEXT FOUR GAS BILLS
ONLY $2.40 IN ALL
Watch for the "C.E-Z" Demonstrator
(Gas company name here)
C-23

ware and plumbing specialties recently sent to all their trade a circular letter which called at once to mind the advantages of installing a gas hot-water heater in their homes. Of course, the letter was in circular form, but it was given a personal touch by inserting the name and address on the typewriter—care being taken that the type and ink matched exactly that of the body of the letter:

Dear Sir—How often have you thought of your childhood days and longed for a plunge in the old swimming hole? But the truth of the matter is that a modern bathtub, with plenty of hot water on tap whenever you want it, is miles ahead of the old swimming hole.

With a modern tub you can bathe with comfort at any season of the year—with water at just the temperature you wish. Didn't you use to wish, sometimes, when you took the first icy plunge, that someone would heat the water for you? That's the advantage of having a gas water heater. You have water when and where you want it, and with any degree of heat.

And you bathe with comfort when the snow flakes are flying outside, and the old pond is thickly covered with ice. "De world do move," and you'd better move with it. Come in and see our splendid stock of GAS WATER HEATERS—and let us show you TO-DAY what a comfort they will be in your own home.

U. S. COAL
The Government says: "Save coal by burning gas in mantles, not in flat-flame burners.
Many "C.E-Z" Lights Save Much Coal
YOU Can Help!
Every Welsbach "C.E-Z" Light you install, in place of a flat-flame burner, will save coa by stopping the waste of gas. The gas now used for flat-flame lighting would last twice as long, and more than a million tons of coal would be saved each year, if all the flat-flames in the country were replaced by the
"C.E-Z" Gas Light
The Coal-saving Mantle Light
By special arrangement with the Welsbach Company, we are able, for a limited time, to offer the "C.E-Z" on terms very advantageous to you, and remember this, the "C.E-Z" not only saves coal for the nation, but it cuts your lighting bill in half, while giving you three times the light you get from the flat-flame.
Combine Patriotism With Personal Profit
—Install Your "C.E-Z" Lights At Once
SPECIAL CAMPAIGN OFFER 60c WITH YOUR NEXT FOUR GAS BILLS
ONLY $2.40 IN ALL
This is the last week of our Special Campaign Offer
(Gas company name here)

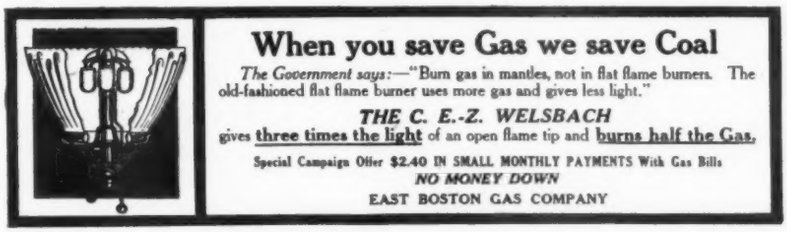
C-30

The "C.E-Z" Gas Light Saves Coal for War
We are making a special campaign to replace all flat-flame and old-fashioned mantle burners with the up-to-date Welsbach "C.E-Z" because there is great need to stop the waste of coal by stopping the waste of gas.
The Government says:
"Burn gas in mantles, not in flat-flame burners"
The reason for this request is the big coal waste through the flat-flame. The "C.E-Z," the coal-saving mantle light, uses only half as much gas and gives three times as much light.
Combine Patriotism and Personal Profit
Make your gas supply last twice as long, by using the Welsbach "C.E-Z" in place of flat-flames. You help save coal and gas for war; you profit by the smaller light bills, and the better, brighter light.
Watch for the "C.E-Z" Demonstrator
(Gas company name here)
Special Campaign Offer 60c With Your Next Four Gas Bills
Only $2.40 in All

C-28

Cards and Flags Brighten Up the Windows

The old saying that "Cleanliness is next to godliness" should be revised in business to "Cleanliness and brightness lead to many sales." A window that is clean and shining, filled with merchandise in the same condition, and lightened up with flags and attractively gotten-up cards is sure to attract attention—and these were the methods used by the Milwaukee Gas Light Company to call attention to their line of heaters and gas fixtures. They showed in the center a hot-


When you save Gas we save Coal
The Government says:—"Burn gas in mantles, not in flat flame burners. The old-fashioned flat flame burner uses more gas and gives less light."
THE C. E.-Z. WELSBACH
gives three times the light of an open flame tip and burns half the Gas.
Special Campaign Offer $2.40 IN SMALL MONTHLY PAYMENTS With Gas Bills
NO MONEY DOWN
EAST BOSTON GAS COMPANY

GAS BILL STICKER USED BY EAST BOSTON GAS COMPANY IN CAMPAIGN FOR ELIMINATION OF OPEN-TIP BURNERS

water coil, topped with several flags, while at either side were cards bordered with red and blue: "Gas for water heating reduces your coal bill," and "Hot water automatically heated by gas." At either side were displayed the castings and fittings used in the construction of hot-water coil and tank, among which were set a number of little flags in wire holders. At one end was a large drawing of heater and hot-water tank, and this was captioned: "Let your hot-water heater be operated by distant control — attached to any tank water heater." Another large card with pictures of four rooms—bedroom, bathroom, kitchen and laundry—was lettered: "Are you prepared for hot-water service on demand? If not, come to us."

The Wise Ones Use Gas

An extremely catchy and novel window was recently arranged by the Bowman Supply Company, Sacramento, Cal. While used with special reference to Hallowe'en, it would be a sales-getter any time during the autumn. In the background was a big sheet of cardboard, cut in the shape of an open book, with a big white owl perched on top. On the book was printed: "The Wise Ones Use Gas." Branches of autumn foliage were banked at either side and suspended from the ceiling. On pedestals of varying heights, covered with throws of copper-colored plush, were gas irons, heaters, mantels and other gas appliances, each topped with a life-sized white owl cut from cardboard. Narrow red ribbons ran from the beak of the owl on top of the book to the various birds on the pedestals, and at the base of the two front pedestals were cards: "Be wise in time —use a gas range for canning efficiency," and the second:

A WISE OLD OWL sat on a tree,
Crying "Too-hoot, too-hoot, too-hee!"
Use GAS in your home and happy be,
"Too-hoot, too-hoot, too-hoot, too-hee."

Inside the store was a metal three-shelf rack, each shelf being covered with green felt, and on each of these shelves was displayed a single gas specialty, on top being a number of handsome glass shades for lamps. A series of black cards lettered in white were tacked to each shelf: "Use Gas to Heat Baby's Milk," "Solve the Servant Problem with a Gas Range" and "Keep the Home Fires Burning—with Gas." For the Hallowe'en season they added a number of witches cut from black card, mounted against a brilliant yellow cardboard moon, and on the floor, which was covered with moss and stones, were a number of toads. A large card advised:

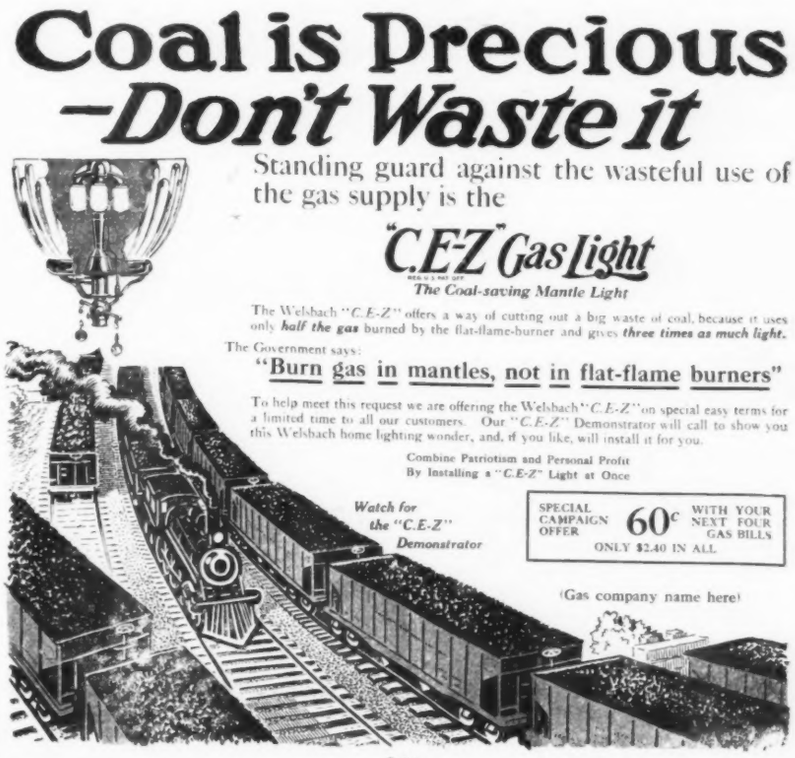
> The Modern Witch—who is loved instead of feared—uses Gas wherewith to make her brew—and the result is a chafing dish supper which enchants all who are fortunate enough to sample it.

Popular Lecture on Protective Lighting

The third of a series of popular lectures prepared under the auspices of the Committee on Popular Lectures of the Illuminating Engineering Society is now ready for presentation. It is entitled "Protective Lighting," and treats of the use of light as a means of defense against damage to the industrial and military machinery of the country resulting from sabotage and acts of enemy agents in general. The treatment of the subject is popular throughout.

The lecture is illustrated by thirty-five lantern slides, and can be presented in an hour's time.

It may be reserved for presentation upon application to the Illuminating Engineering Society, 29 West Thirty-ninth Street, New York, N. Y.


Coal is Precious
—Don't Waste it
Standing guard against the wasteful use of the gas supply is the
"C.E-Z" Gas Light
The Coal-saving Mantle Light
The Welsbach "C.E-Z" offers a way of cutting out a big waste of coal, because it uses only half the gas burned by the flat-flame-burner and gives three times as much light.
The Government says:
"Burn gas in mantles, not in flat-flame burners"
To help meet this request we are offering the Welsbach "C.E-Z" on special easy terms for a limited time to all our customers. Our "C.E-Z" Demonstrator will call to show you this Welsbach home lighting wonder, and, if you like, will install it for you.
Combine Patriotism and Personal Profit
By Installing a "C.E-Z" Light at Once
Watch for the "C.E-Z" Demonstrator
SPECIAL CAMPAIGN OFFER 60c WITH YOUR NEXT FOUR GAS BILLS
ONLY $2.40 IN ALL
(Gas company name here)

C-24

AMERICAN GAS ENGINEERING JOURNAL

SIXTIETH YEAR

Published Weekly by
AMERICAN GAS LIGHT JOURNAL, INC.
42 Pine Street, New York, N. Y.

ELBERT P. CALLENDER, *President*
STANTON G. KRAKE, *Vice-President*
FREDERICK A. SOUTHWORTH, *Secy-Treas.*
EUGENE C. MILES, *Editor*

Subscription $3.00 per year, including postage in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines.
In Canada, $4.00 Foreign, $5.00
Single Copies, 10 Cents

WESTERN MANAGER E. B. FRITZ
CHICAGO OFFICE 587 So. Dearborn St.

Entered at the Post Office, New York City, as Second Class Matter.

CONTENTS

FUNCTION OF EMPLOYMENT BUREAU NOT TO DEFINITELY ENGAGE ANYONE TO FILL A POSITION, BUT TO SECURE SUITABLE APPLICANTS, SO HEAD OF DEPARTMENT CAN MAKE BEST SELECTION. BY RALPH ELSMAN 289

ELECTRICITY WILL NOT REPLACE COAL 290

WITH BIG PROPORTION OF INEXPERIENCED WORKERS THAT IS CHARACTERISTIC OF TIMES SAFETY WORK IS MORE THAN EVER IMPERATIVE 291

DISCUSSES VARIOUS MANUAL RESUSCITATION METHODS 293

STORING COAL 295

THE CARBONIZATION AND DISTILLATION OF PEAT 295

MERCHANDISING GAS 297

EDITORIALS 300

HOW THE GAS COMPANIES ARE HELPING THE NATION 302

NEWS OF THE GAS INDUSTRY 303

PERSONAL NOTES 310

SOCIETIES AND ASSOCIATIONS 311

CONSTRUCTION NOTES 311

Leaving It to Lubricate the Bearings of Generations to Come

Much thought has been given to the fuel of the future. Will hydroelectric power supply it? Will it be alcohol? But subconsciously even extremists among the conservationists feel that after all there is little real reason for worry as to the fuel of posterity when the coal resources of the world give out. Something out of the dozens of substitutes suggested will surely be found.

But little thought is given to an essential without which all fuel substitutes will be valueless. Of what avail the tons of falling water throughout the country if turbinbes cannot be run to convert their energy into electric power? Of what avail even perpetual motion, if there are not lubricants?

Yet to-day we are using vast quantities of oil in gas manufacture. Millions are requiring the consumption of other vast quantities for idle, thoughtless pleasure, but over this outflow we have no control.

Except in special cases, as on the Pacific Coast, oil is no longer necessary or desirable in the production of an economical fuel gas. War-time necessities doubtless will compel a radical curtailment in the quantities we use as a temporary expedient.

But when the war is ended the gas man as a conservationist should abate not one iota in his effort to eliminate the use of oil in producing his product. It is a duty he owes not himself so much, as one he owes his great-grandchildren many genererations hence.

Keeping the War Away

Because of its isolation, America has been singularly fortunate in this war. The immediate physical horrors of war have not touched this country. Its fields have not been laid waste and its fruit trees cut down; its factories have not been ravaged; its homes have not been crushed to ruins. France and Belgium have paid the price of contiguity to the land of the Hun; even England has suffered from the vista or airplanes and Zeppelins, but the war has been kept away from America in its dreadful material manifestations. The worst that has happened has been the sinking of some fishing boats and freighters along the Atlantic coast by sporadic submarine raiding.

This immunity has not been given to us by any desire or purpose of the enemy. If the Hun had his way, it would not last. Devastation has not visited us because the armies of the Central Powers are kept busy in Europe and their navies practically strangled by the combined navies of the Allies. So long as they are being engaged there their power of evil will be neutralized so far as the United States is concerned.

It is natural that we should want to preserve our land from the affliction which has been visited on France and Belgium and Britain. To accomplish this a constant

flow of men and supplies and ships must be maintained. This means a constant flow of dollars into the Treasury. The proceeds of three former Liberty Loans have been devoted to this purpose, but a Fourth Loan has been called for. This loan, the Government announces, is to be a bigger one than any predecessor. As the military situation becomes more critical, the need for money becomes more pressing. America must meet that need. Out of this country's great resources money must come to finance all the activities of the war machinery which has been set in motion.

The call for these vast sums ought not to overwhelm us. The nation is rich and prosperous. Purses which have purchased once have been refilled and can purchase again. Business has been disturbed by the war, but it has not been stopped; the wheels of industry are whirring at top speed, and in most communities money is circulating faster and more plenteously than ever before in the memory of this generation. If this condition is to be maintained, if the war is to be kept away, a good proportion of this money must be invested in bonds of the Fourth Liberty Loan. No hardship which we should not assume willingly and eagerly exists in that. The money will be loaned to the Government, on the best of security, at a desirable rate of interest. That is, it will be money laid away for use at some future time. Meantime it will be keeping us in safety, serving the splendid purposes of our nation and aiding in redeeming the world from a monstrous evil.

Liberty Bonds are a good investment, a safe investment, a patriotic investment which no good American ought to pass by. Buy them—buy many of them. They will keep the war away.

Now a Greater Need Than Ever Before

About two years ago the then *American Gas Light Journal* took stock and found itself wanting. In the opinion of those who made the study, it was not giving the field the service the needs of the industry required. A study likewise was made of contemporary gas journals. They also failed to impress one with the thought that their readers were finding anything in them that was very useful to them in their daily work.

What was lacking? The answer was not found without further study. An actual count disclosed that the bulk of the editorial matter published was conceived in the various editorial offices, or was reprinted—in one case, at least, it emanated principally from the sanctums of energetic, but not necessarily authoritative, advertising managers of manufacturers, and was usually set off by more or less paid-for advertising space.

There was a noticeable lack of material contributed by authors actually at work in the gas plants or their appurtenant departments.

Editors, according to our somewhat partisan viewpoint, are all right in their way. We have nothing to say against them as a class. As a matter of fact we are somewhat prejudiced in their favor and inclined to do them more than justice. But an editor, or an editorial writer, being removed from the continuous perplexities and problems connected with making and selling gas, is not in a position to gain that intimate knowledge of the details of gas company work that alone can enable him to single out the little points John Jones needs help on, and tell John how he can get around his difficulties.

We would not care to underestimate the value of convention papers. We have reprinted a vast number of them ourselves, and will continue to do so, but only those which impress us as telling something new and having a real value. But the work of the committees on papers of the associations closely parallels that of the editor of a gas journal. It is a case of first locating the fellow who has something to tell, then a selection of that which experienced judgment tells one the workers in the gas industry want and need. It may not be modest to publish the fact, but, frankly, we believe that the average gas journal editor is a better hand at this kind of a job than is the average member of a committee on papers. The latter is usually very much occupied with the duties that bring him the wherewithal to fill up the full dinner pail. His locating authors and selecting papers is a side line. It is the gas journal editor's whole job.

We had concluded that the weakness of the gas journal was in lack of intimacy with the needs of their field and a lack of a sufficient proportion of information contributed by actual workers in the industry. We added as a by-product our finding that the convention papers fell short in that there is a vast wealth of valuable experience and inspiration stored in the heads of men who are not even association members, and if they are so inconspicuous in their affairs that the committee on papers couldn't locate them with a searchlight.

As to the manufacturer's advertising manager as a contributor to the editorial pages of a gas journal little need be said. Sometimes he has matter of high value to offer, but his contributions should be carefully scanned. He is too apt to be partial even when he is honest. And when he buys his entree by means of certain space in paid advertising, he is certain he's going to get what he considers his money's worth.

When those who made these studies were convinced that they were right, the then *American Gas Light Journal* frankly acknowledged its shortcomings, and devoted itself to a new policy—that of seeking out in the field actual workers who had something to tell and influencing them to tell it.

Its principal contemporaries apparently were well content for the present with the course they were following; so much so, in fact, that one of them bitterly assailed us for our comments on the shortcomings of the gas journals—all of them, ourselves included.

But the JOURNAL's policy proved a sound one. The

voice of the field began to be heard. Gas men turned to the JOURNAL in increasing numbers, feeling that in it they would find a real help over the rough places of their day's work.

New writers appeared in greater numbers than ever before in the history of gas journalism, and oddly, destiny so shaped the world's affairs that there has been a greater need for their assistance and information than ever before.

The JOURNAL feels that it has blazed a new trail in gas journalism; that it has thereby made a timely and valuable contribution to the gas industry's welfare. But the need of new writers, providing helpful information on timely subjects is at its peak, and the JOURNAL needs all the co-operation its readers can give it. Write now, if you never did before, and be of help to your fellow workers in double measure.

Getting Them Back Again

Attention has been called before in these columns to the number of industrial fuel gas engineers that are leaving the gas industry to engage in other industries.

It took a great deal of effort on the part of the industry to develop the relatively few good industrial men it had at the beginning of the war. Since that time we have seen one after another of this few whose achievements had made their names generally known slipping away from us, and the tendency continues.

In a matter like this, facts must be faced. The truth is, the industrial fuel man in proportion to the quantities of gas that were sent out as a result of his efforts has been greatly underpaid. He was likely quarry for anyone who wanted him bad enough to offer compensation really proportionate to his worth.

The AMERICAN GAS ENGINEERING JOURNAL does not think the new kinds of work these industrial fuel engineers we are losing are engaging in is going to detract in any way from their value as industrial fuel gas business-getters. On the contrary, it is going to benefit them. They are, as a rule, looking at the industrial subject from the other side—the consumer's side. They are learning new things about different classes of industrial work that present a market for gas.

The gas industry if it is promptly to attain its real future in the industrial fuel field must have these men back. The AMERICAN GAS ENGINEERING JOURNAL does not suggest getting them back immediately. A good part of them are engaged in highly essential war work, and the gas industry has demonstrated that it can, temporarily at least, do without them. It is selling all the industrial gas it can produce. Apparently, therefore, these men have found their most effective place in regard to the national war effort.

But when the war is over, and when industrial gas must be sold again on a really competitive basis, the gas industry must have these men back. There is but one means of getting them. This means necessitates readjustment; looking at the industrial branch from a new perspective. The ideal industrial fuel gas engineer is a man of many talents and exceptionally broad and sound information. Such a man is a very rare being. He has a high value. We should be ready to big high enough to get him and to hold him and to attract still others. His opportunities for getting business are so vast that, given the requisites demanded and a fair degree of industry, he can easily more than repay the cost.

How the Gas Companies Are Helping the Nation

ERNEST O. HICKSTEIN, formerly with the engineering research department of the Empire Gas & Electric Company in Bartlesville, Okla., is now working at the Navy Yard in Philadelphia, Pa.

LIEUT. GEORGE A. CAINE, who recently returned from France, addressed the Relatives' Auxiliary of the Twelfth Engineers Sept. 12 at the Statler Hotel. He formerly was with the Laclede Gas Light Company, St. Louis, Mo. He enlisted as a private.

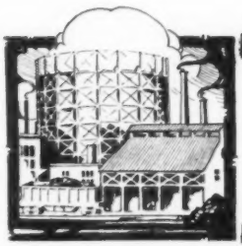
R. C. DOUGLAS, former head of the Manitowoc (Wis.) Gas Company, who disposed of the plant to the Ryal interests a year ago and who left for the East several weeks ago, has been appointed to a post in the Government service at Washington and is engaged in the export steel department at the nation's capital.

R. E. HILL, formerly of the engineering department of the Empire Gas & Electric Company, Bartlesville, Okla., has been transferred from the Syracuse recruiting station to Norfolk, Va.

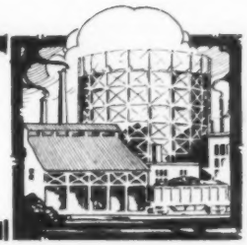
G. O. KLINGMAN, formerly with the Salina Light, Power & Gas Company, Salina, Kan., as gas superintendent, is now in the United States Army, stationed at Camp Funston, Kan.

WILLIAM MARESCO, of 570 Neptune Avenue, Brooklyn, N. Y., a collector of the Brooklyn Borough Gas Company, left recently for Charleston, S. C., to take his place in the ranks of Uncle Sam's sea fighters. He enlisted in the Navy July 15.

CHARLES B. HEALEY, of the Blackstone Valley Gas & Electric Company, has been appointed captain of Division C, of the Food Administration, State of Rhode Island.



NEWS OF THE GAS INDUSTRY



Richmond Municipal Plant Adds 400 New Gas Consumers in Short Period

According to a statement from Inspector Joseph Shelton, of the Richmond City Gas Works, the population of Richmond, Va., is rapidly increasing. This fact is noticeable from the large number of new meters being installed. Within the present "moving period," Mr. Shelton said, there have been 400 new installations.

"That means that 400 new users of gas have been registered within a period of about ten days."

6,176 Tickets to War Exposition Bought by Chicago Employees at Advanced Sale

Employees of the Peoples Gas Light & Coke Company went "over the top" for the recent Government war exposition held in Chicago. According to reports just received, they purchased 6,176 admission tickets at the advance sale, to say nothing of thousands more which are said to have been bought at the grounds.

Empire Produces 60,000 Barrels of Petroleum a Day

The Empire Gas & Fuel Company, a subsidiary of the Cities Service Company, reports that production of petroleum in the year ended June 30 was in excess of 14,550,000 bbl., an average of approximately 40,000 a day for the period. J. C. McDowell, president, said that current production was more than 60,000 bbl. daily from the company's lands in Kansas anl Oklahoma.

The company's output of crude oil, the report stated, now amounts to 14.6 per cent of the total production of the mid-continent field, and is larger than the output of the Rumanian and Galician oil fields prior to the outbreak of the war. In addition, the Empire organization is producing 100,000,000 cu. ft. of natural gas per day.

Two Waterville Companies Merged

The papers in the merger of the Waterville (N. Y.) Electric Light & Power Company and the Waterville Gas Light Company have been filed in the county clerk's office. The name of the new concern is "The Waterville Gas & Electric Company." The directors of the corporation are H. B. Sweet, Utica; M. W. Terry, A. M. Wright, J. W. Candee and C. M. Wickwire. Operations are to be carried on in Sangerfield, Marshall and Augusta. The capital stock is $20,000, divided into 200 shares.

Nine Coal Companies Consolidated

By the consolidation of nine coal companies operating in the western Pennsylvania, southern Ohio and West Virginia fields, the Consumers Fuel Company has just been organized in Pittsburgh. This company and the Consolidated Fuel Company, an Ohio corporation, with which it is closely allied, have a combined capitalization of approximately $4,000,000, the Consumers company being capitalized at $2,350,000 and the Consolidated company at $1,500,000. In each company the sale of a certain amount of treasury stock for purchase of additional machinery has been approved by the National Capital Issues Committee.

Companies merged into the Consumers Fuel Company include the Miners Block Coal Company, the Maple Hocking Coal Company, the Goucher Mine Company, the Miners Co-operative Company, the Louise Coal Company, the Quality Cement Coal Company and the Rachel Gas Coal Company.

The properties originally were purchased, developed and equipped by John H. Jones, and sold to the companies organized and financed principally by large users of coal. The two corporations are now producing yearly 2,000,000 tons of steam, gas and by-product coal. They expect to increase their production early next year to 3,000,000 tons, and by the close of next year to 4,000,000 tons.

Mr. Jones, who is retained in charge of production of mines, evolved two years ago the plan of meeting the increasing shortage of coal by having the large users of coal financially interested in the production of the fuel they needed. His suggestion was approved and more than 100 large industries in this country and Canada have become participators in the plan.

Fifteen Million-Foot Well Drilled in Near Elk City

The Sachem Oil Company drilled in a 15,000,000-ft. gasser Sept. 12 in their Brook No. 1, 4 miles northwest of Elk City, Kan., at a depth of over 1,300 ft. This is the fourth big gasser well in section 27, and there are five other drilling rigs at work in that field.

Fort Smith Company Secures New Customer

A lamp chimney factory, employing 300 men, has recently been added to the lines of the Fort Smith Light & Traction Company for gas service.

Value of Milwaukee Company's Property Increases

Property of the Milwaukee (Wis.) Gas Light Company lying within the city limits has appreciated $676,679 during the last year, according to the assessment made by the State tax department.

The valuation set by the State on this property is $13,294,429. In 1917 it was appraised at $12,617,750.

The increase is due to added value of buildings, material and equipment, caused by higher prices, plus the normal appreciа-

tion of between $300,000 and $400,000. For the first time the State instead of the city set the value on the property.

Crude Petroleum Operations as Compiled by U. S. Geological Survey

The following comparative summary of the movement of crude petroleum in July, 1918, represents the operations of 211 pipe lines and refining companies that handle or receive oil directly from the productive fields east of the Rocky Mountains, and is compiled from reports received by the United States Geological Survey, Department of the Interior, prior to noon of Aug. 30, 1918.

This compilation includes statements filed by

47 companies operating in the Appalachian field
11 companies operating in the Lima-Indiana field
7 companies operating in the Illinois field
103 companies operating in the Oklahoma-Kansas field
13 companies operating in the Central and North Texas field
10 companies operating in the North Louisiana field
10 companies operating in the Gulf Coast field
8 companies operating in the Rocky Mountain field

The moderate loss in the quantity of petroleum moved from wells and field storage tanks, charged in July to the Gulf Coast field, was more than offset by the gain credited in that month to the other fields listed, and the consequence was a net gain of 2.5 per cent compared with June, 1918, and of 2.4 per cent, compared with July, 1917.

Additions in July to stocks of central and north Texas, north Louisiana and Rocky Mountain oils were decidedly insufficient to offset current drafts on the surface reserves of Eastern, Oklahoma-Kansas and Gulf Coast oils, as a consequence of which there was a net depletion of stocks in excess of 3,000,000 bbl. during the month. In the fields to which this summary relates the net depletion of stocks since July 31, 1917, has been about 21,000,000 bbl.

CRUDE PETROLEUM MOVED FROM FIELD SOURCES
(Barrels of 42 gal. each.)

Field	July, 1918	June, 1918	July, 1917
Appalachian	2,088,564	1,961,734	2,109,482
Lima-Indiana	295,721	281,307	273,222
Illinois	1,192,836	1,186,940	1,369,124
Oklahoma-Kansas	12,266,331	12,193,712	12,656,417
Central and North Texas	1,269,523	1,086,440	963,867
North Louisiana	1,337,468	1,072,737	863,983
Gulf Coast	1,970,124	2,148,918	2,052,955
Rocky Mountain	1,121,601	1,082,462	743,439

APPARENT DELIVERIES OF CRUDE PETROLEUM TO REFINERIES OR OTHER CONSUMERS
(Barrels of 42 gal. each.)

Class of Oil	July, 1918	June, 1918	July, 1917
Appalachian	2,095,967	2,386,851	2,119,209
Lima-Indiana	395,902	405,897	420,370
Illinois	1,331,321	1,291,527	1,664,428
Oklahoma-Kansas	15,884,444	13,332,640	10,822,652
Central and North Texas	837,726	915,418	1,086,271
North Louisiana	1,072,125	751,014	1,134,917
Gulf Coast	2,030,846	2,304,159	2,907,143
Rocky Mountain	1,054,267	1,057,500	845,454

STOCKS OF CRUDE PETROLEUM AT END OF MONTH
(Barrels of 42 gal. each.)

Class of Oil	July, 1918	June, 1918	July, 1917
Appalachian	3,527,289	3,534,692	4,334,835
Lima-Indiana	1,396,893	1,497,074	2,156,840
Illinois	2,780,927	2,919,412	4,297,723
Oklahoma-Kansas	86,845,810	90,463,923	105,353,478
Central and North Texas	3,952,185	3,520,388	2,153,792
North Louisiana	3,757,789	3,492,446	3,686,736
Gulf Coast	8,129,620	8,190,342	10,001,572
Rocky Mountain	968,520	901,186	728,710

Note—Statistics of petroleum movement in California are not included in this tabulation because of delays incident to procuring first-hand data.

The quantity of oil apparently consumed in July was 10 per cent greater than in June, 1918, and 17 per cent greater than in July, 1917.

Prepared under the supervision of John D. Northrop.

Increased Rate Schedule Filed by Peoples Natural Gas Company

The Peoples Natural Gas Company has filed with the public service commission a new schedule of rates for the entire territory served, to become effective Oct. 10, making an increase in rates. There is also withdrawal of service of so-called surplus gas for use under boilers, furnaces, etc., which becomes effective Nov. 1.

The following are the domestic rates for the territory of Altoona, Cresson, Juniata, Loretta, Portage, Sankertown, Summit and villages served east of New Florence, Pa.

Class 1, domestic consumption, is increased from 37 cents to 42 cents per 1,000 ft., with 2 cents per 1,000 ft. discount. Class 2, known as special consumers, using gas in quantities to exceed 300,000 ft. per day, and who cannot readily substitute fuel, will pay the same rate as Class 1. Class 4, churches and charitable institutions, will have their rate increased from 31 to 37 cents, with the customary discount.

In Pittsburgh and the territory west of New Florence, domestic and special consumers will have their rate increased from 30 and 32 cents to 37 cents, with the customary discount. Churches and charitable institutions will have rates increased from 32 to 36 cents, with the customary discount.

Gas Shortage at Battle Creek Due to Improvements

Conserve gas. This is the request of the Calhoun Gas Company, of Battle Creek, Mich., which is passing through a critical period due to construction work underway at the plant.

"There will be plenty of gas for the needs of the city if it is used in moderation. But if people insist in trying to heat homes with their kitchen ovens, instead of building fires these cold mornings, there will be a shortage."

The reason for the gas shortage is that it has been necessary to shut off more than 50 per cent of the present battery of retorts in order that they may be connected with the new battery which is being built. With-

HERE LIES
AN INTIMATE STUDY OF THE FIRST MAN WHO SUGGESTS THAT WE SHOULD NOT LAY IN OUR COAL FOR NEXT WINTER AT ONCE BUT WAIT FOR THE PRICE TO DROP —
(Copyright, 1918, by H. T. Webster.)

Order Your Coal Now

Many Indianapolis householders took the lessons of last winter to heart and laid in their fuel during the spring and summer.

But many had short memories and hopeful natures and trusted to luck for another winter. Coal dealers had idle teams many times during the past summer.

Further Delays are Dangerous
Order Your Fuel at Once

DO NOT COUNT ON ANTHRACITE COAL

A little anthracite is coming in, and more will come later. But there will not be enough to supply all people who want to use clean fuel. Good LUMP INDIANA COAL in the cellar is better than ANTHRACITE COAL as a prospect. At least make a start with Indiana coal and, if it is possible to get anthracite later, you will not regret your start.

DO NOT COUNT ON BY-PRODUCT COKE

The demand for BY-PRODUCT COKE for war industries has been unprecedented, and it is growing. We may possibly have a small quantity of egg coke for the domestic trade after our new ovens are completed, about January 1st, but it is quite as possible that all of it will be absorbed by essential industries which can not use coal. We are supplying the domestic trade of Indianapolis with about 3,000 tons monthly of **Chestnut coke,** which is sold chiefly for baseburners and water heaters, which can not use soft coal. We doubt whether we can greatly increase this quantity.

DO NOT COUNT ON GAS

Last winter many thousand householders attempted to heat their homes by burning gas in grates and kitchen ranges. It was impossible to supply sufficient gas for that purpose last winter and it will be impossible to do so even after our new ovens are completed. No gas company in the world could supply enough gas to permit a large proportion of the population to substitute it for coal for general heating purposes. Moreover, such a use of gas is wasteful and therefore unpatriotic. After January 1st we expect to be able to furnish a much better supply of gas, but an attempt on the part of our consumers to substitute gas for coal on an extensive scale will produce as bad a situation as we had last winter. The city has used more gas during the past three days than during any other three days this year. DO NOT WASTE GAS. LAY IN YOUR COAL.

CITIZENS GAS COMPANY

in a month this stage of the enlargement of the plant will be over, and all of the present retorts will be back at work. The new battery will be completed by Dec. 1, after which time the company will be in a position to meet the most exhaustive demands. General Manager Seymour explained that this reconstruction work, which has shortened the gas supply, is also responsible for the failure of the company to deliver coke on orders for some time past. Just as soon as the critical period is over the company will complete the filling of orders now on the books, although as previously announced these have been reduced 50 per cent.

Indianapolis Company Warns Consumers to Order Coal Now in Advertisement

Recent severely chilly weather has resulted again in an extreme shortage of gas supplied to Indianapolis citizens by the Citizens Gas Company, which has in progress the construction of forty new coke ovens, to be completed by Dec. 1, which, it is hoped, will take care of all demands on the company. Meanwhile the company has been compelled to issue a unique warning to its patrons not to depend on gas for heating during the coming winter, because of the coal shortage and the constantly increasing demands of war product plants.

The appeal was in the form of a large advertisement, which told the "story" to the patrons in a way that could not be misconstrued. The advertisement is reproduced.

Permit Increased Rate for Mobile

The Alabama Public Service Commission rendered a decision Sept. 16 granting the petition of the Mobile Gas Company for an increase of 25 cents per 1,000 cu. ft. of gas in its rate in the Gulf City.

Buffalo Company Petitions for Rehearing Claiming That Division of Consumers Would Be Hardship

The Iroquois Natural Gas Company, of Buffalo, N. Y., recently asked the Public Service Commission, Second District, for a rehearing on the order of the commission adopted Aug. 22 directing the company to divide its consumers into two classes, domestic and industrial, and restricting the serving of natural gas from Dec. 1 to March 31.

The Iroquois company, in its petition for a reopening, said it would not accept the order of the commission.

The company contends, in its petition, that the prohibition on industrial consumers from Dec. 1 to March 31, would probably result in the discontinuance by industrial consumers of the use of natural gas during the entire year, that the prohibition would work a hardship, necessitate changes in motive power and affect the company's revenues. The prohibition on domestic consumers not to exceed 40,000 cu. ft. a month from Dec. 1 to March 31 is unreasonable, as probably 10,000 users use over that amount a month. The company maintains that except for a few days in extreme cold weather it has sufficient gas to supply all consumers.

The company says it would be inclined to accept the prohibition order on the use of gas in furnaces not originally constructed for such use, provided the prohibition against industrial and domestic consumers was eliminated.

Cutting of the supply of natural gas, as directed by the commission's order, the company says, will require the gas company to charge from 45 to 50 cents net per 1,000 cu. ft., and that reduced revenue should be considered as a factor in the company's rate case now pending.

The Iroquois company also contends that self-registering pressure gauges should not be left absolutely to the control of the commission, and the requirement of a standard pressure of 4 oz. per square inch is objected to, the company claiming that the gas service is subject to conditions beyond the company's control. The gas company also claims the commission is without authority to make the order, as it would make the company liable for violation of Section 65 of the Public Service Commission law.

Cities Service Company's Earnings Statement

Net income of Cities Service Company for August, 1918, was $1,696,060, a gain of $329,400 over August, 1917; after providing for all expenses, interest and other charges of Cities Service Company, net income applicable to payment of dividends for August, 1918, was $1,609,916, an increase of $274,291 over August, 1917; balance available for reserves, dividends on the common stock and surplus for the month was $1,273,121, compared with $1,010,255 for August, 1917, or a gain of $262,866.

For the eight months ended Aug. 31, 1918, gross income was $14,961,563, an increase of $2,408,793 over the corresponding eight months of 1917; net income applicable to the payment of dividends for the eight months was $14,605,658, an increase of $2,293,547; after payment of preferred dividends the balance available for reserves, dividends on the common stock and surplus for the eight months ended Aug. 31, 1918, was $11,919,908, an increase of $2,006,522.

For the twelve months ended Aug. 31, 1918, gross income of Cities Service Company was $21,661,286, a gain of $4,364,343 over the preceding twelve months; after expenses, interest and other charges, net income applicable to dividends for the twelve months was $21,185,949, an increase of $4,212,860; balance for the twelve months available for reserves, dividends on the common stock and surplus was $17,187,229, compared with $13,550,718 for the twelve months ended Aug. 31, 1917, or a gain of $3,636,511.

Total surplus and reserves of Cities Service Company Sept. 1, 1918, were $33,006,352, while there had become available up to Sept. 1, 1918, for reinvestment in properties, under the terms of resolution of the board of directors, $39,171,091. Preferred stock outstanding in the hands of the public Sept. 1, 1918, was $67,387,339, par value, while there was outstanding with the public $27,251,572, par value, of common stock.

The Florence Oil Corporation filed articles of incorporation at Dover, Del., capital $100,000.

	12 Mo. Ending Aug. 31, 1918	12 Mo. Ending Aug. 31, 1917	Month of August, 1918	Month of August, 1917
Gross earnings	$21,661,286.24	$17,296,942.89	$1,696,059.92	$1,366,659.69
Expenses	423,095.87	320,588.86	54,325.35	30,809.46
Net earnings	$21,238,190.37	$16,976,354.03	$1,641,734.57	$1,335,850.23
Int. on debentures.	52,240.89	3,264.32	31,818.74	225.68
Net to stock	$21,185,949.48	$16,973,089.71	$1,609,915.83	$1,335,624.55
Divs. pfd. stock	3,998,720.50	3,422,371.65	336,795.00	325,370.00
Net to com. stock and reserves	$17,187,228.98	$13,550,718.06	$1,273,120.83	$1,010,254.55

Debenture fund	$615,988.47
Contingent fund	820,782.50
Stock surplus	3,113,188.25
Surplus reserve	4,850,786.94
Surplus	23,605,606.53
Total surplus and reserves	$33,006,352.69

	12 Mo. Ending Aug. 31, 1918	12 Mo. Ending Aug. 31, 1917	
Number of times preferred dividend was earned	5.3	4.95	
Per cent earned on average amount of common stock outstanding	62.07%	57.08%	
Preferred stock outstanding:			
In hands of public	$67,387,338.79		
Owned by company	2,573,161.57		
			$69,960,500.36
Common stock outstanding:			
In hands of public	$27,251,572.30		
Owned by company	4,870,891.70		
			32,122,464.00
Series B 7 per cent convertible debentures:			
In hands of public	$5,228,114.50		
Owned by company	24,771,885.50		
			30,000,000.00

Louisville Board of Trade Committee Reports on Gas Situation

A special committee appointed by the Louisville Board of Trade to investigate the natural gas supply situation in that city has made a report to the Mayor. The committee recommends permitting the Louisville Gas & Electric Company to supplement the natural gas supply during the winter months by manufactured gas produced in the two gas plants belonging to the company. The committee also favors a new rate schedule which will charge progressively higher prices for large quantities of gas for house heating purposes in order that the excessive use of gas during periods of cold weather may be controlled and curtailed. The company is negotiating for a supply of natural gas from eastern Kentucky sources in addition to that secured from West Virginia, but the capacity of the 12-in. pipe line to Louisville governs the volume of natural gas which can be delivered.

The company, through its vice-president, Halford Erickson, has been conducting a newspaper advertising campaign during the past month to inform the public of the facts involved in the gas situation and the steps the company believes necessary to prevent a gas shortage next winter.

Higher Rate Asked for Burlington

A communication from the Burlington (Iowa) Gas Light Company was presented at the regular semi-weekly meeting of the city council in which the reasons for an increase in the prevailing gas rates were concisely stated.

The council is asked to grant permission to the company to raise the rates from $1 to $1.10. The communication was filed, but no decision as yet has been reached.

Earnings Western States Gas & Electric Company

Gross and net earnings of the Western States Gas & Electric Company (California) for the years ended Aug. 31, 1918 and 1917, are reported as follows:

	1918	1917	Increase
Gross earnings	$1,561,616	$1,340,331	$221,285
Net earnings	640,253	630,712	9,541

Safety Congress Has Large Attendance at Opening Session

With more than 2,000 safety engineers, plant superintendents and other executives, including a good representation from the gas companies of the country, present, the seventh annual safety congress of the National Safety Council was opened at the Hotel Statler, St. Louis, Mo., on Sept. 16.

From the start it was evident that the motif of all papers and addresses would be, not "Avert accidents and save money," as in former years, but rather "Avert accidents and help win the war." In fact, the program itself points out that "the world war is the greatest safety campaign ever waged—a campaign to make the world safe for democracy. To adequately support our army abroad, we must conserve our man-power at home—we must prevent accidents in the industries of America."

Charles M. Schwab, of the Emergency Fleet Corporation, Director General McAdoo of Railways and Secretary of the Interior Lane, all of whom were on the program for the opening sessions, telegraphed at the last moment that because of the press of war duties at the capital it would be impossible for them to come.

Every speaker on the first day of the convention either in whole or in part discussed safety work as it is related to the carrying on of the war. A pantomime, staged as a surprise, in which a lively verbal duel was fought by "Death" and "Universal Safety," brought home strikingly the fact that during the time American troops have been in France more casualties occurred in American industries than among the troops.

Greenville Company Wants to Increase Rates

The city council has received a petition from the Greenville (Tex.) Gas Company asking the privilege of raising the rates from $1.50 to $1.75 per 1,000 cu. ft.

THE ROBERTA OIL & GAS COMPANY has been incorporated with $100,000 capital at Frenchburg, Ky.

Boston Company Adopts "War Finish" for Wrenches and Makes Changes As a War Measure

With the idea of releasing labor and conserving material and fuel, the Walworth Manufacturing Company, of Boston, Mass., at the urgent request of the War Industries Board, has adopted as a war measure the following:

1. We will discontinue the manufacture of the 6-in. genuine Walworth Stillson wrench.

2. We will discontinue the manufacture of the wood-handle genuine Walworth Stillson wrench in all sizes (making only the steel handle).

3. We have adopted the "war finish" as our standard finish for genuine Walworth Stillson wrenches for the duration of the war. No change whatever has been made in patterns or quality of material or workmanship in the wrench proper. A tag will be attached to each wrench giving the reason for the change to "war finish" standard.

Although the "war finish" wrench presents a rougher appearance, it is the same as it has been for nearly fifty years.

Contempt Proceedings Started in Chicago Rate Case

Bills Rendered at Increased Rate

Contempt proceedings looking to the punishment by fine or imprisonment of officials of the Peoples Gas Light & Coke Company, of Chicago, for violation of Judge Gibbons' injunction in the rendering of gas bills to consumers were begun recently before Circuit Judge Torrison, of the Cook County Court.

Donald R. Richberg, special counsel for the city in the $10,000,000 gas refund litigation, asked that the officials of the company be cited to show cause why they should not be punished for contempt in putting into effect on Sept. 11 the ruling of the public utilities commission, which is in conflict with the Gibbons' injunction.

John S. Miller, representing the gas company, took up the argument in opposition to the motion. Alderman Henry D. Capitain, chairman of the gas litigation committee, presented an affidavit, setting forth his version of the history of the dispute. The Gibbons' injunction was granted in 1911 to the gas company, and pre-

vented the enforcement of the city's 70-cent gas ordinance.

This ordinance permitted the gas company to charge not to exceed 80 cents per 1,000 cu. ft. for gas, pending final disposition of the case, which is still in the courts. The Illinois Public Utilities Commission set the rate at 88 cents per 1,000 cu. ft.

"The gas company cannot benefit by an act of this court to the extent of many millions of dollars, and then when the same order operates to limit its income throw it aside as of no effect," said Attorney Richberg.

"The injunction was temporarily to continue until final disposition of the case, and the city has been using every endeavor to bring the case to a final determination and decide the possession of the $10,000,000 overcharges."

Attorney Miller contended that the Gibbons' injunction set aside an ordinance covering a five-year period, and became null at the end of the ordinance period, even though the suit growing out of it has not yet been settled.

Recently the Cook County Real Estate Board adopted resolutions declaring the action of a majority of the State public utilities commission in granting the gas light company the power to increase the gas rate 28.5 per cent as excessive, and threatening to inflict "an unjust burden upon the gas consumers of Chicago." At the same time the board served notice of an appeal to the courts on the attorneys of the gas company, Corporation Counsel Ettelson and Special Counsel Richberg. The resolutions adopted by the board were as follows:

"Whereas, The two senior members of the Illinois State Utilities Commission, Messrs. Funk and Shaw, were present at all of the hearings before said commission, and after due deliberation objected to the ruling of the aforesaid three junior members of the said State public utilities commission on the ground that the evidence produced by the Peoples Gas Light & Coke Company was not sufficient to warrant an increase of 28½ per cent in gas rates; and

"Whereas, The city of Chicago filed a special appearance in said cases and contested the claims for an increase by the Peoples Gas Light & Coke Company; now, therefore, be it

"Resolved, That the public utilities committee of the Cook County Real Estate Board is of the opinion that the increase of 28.5 per cent in gas rates granted to the Peoples Gas Light & Coke Company by the majority ruling of the State public utilities commission is excessive, and if permitted to stand would inflict an unnecessary and unjust burden on gas consumers in the city of Chicago; and be it further

"Resolved, That in the interest of equity and justice to the people of Chicago this committee believes that an appeal should be taken from the majority ruling of the State public utilities commission, and that J. Madison Pace, chairman of the public utilities committee of the Cook County Real Estate Board, and its counsel, William M. Lawton, be, and they are hereby authorized to effect and prosecute an appeal from said ruling to the best of their ability and resources."

North Adams Rates Increased for Duration of War

The price of gas in North Adams, Mass., will be $1.20 for 1,000 cu. ft. from Sept. 1, according to an order received Sept. 18 from the State gas commission. The price heretofore since 1911 had been $1 per 1,000, with no minimum charge, but hereafter a minimum charge also will be made, according to the board's decree.

The raise in price is the result of the petition by the North Adams Gas Light Company asking for permission to increase its rates, a public hearing on the matter having been held. In making the order for increased rates the gas commission points out the facts that the increased cost of production, on account of the abnormal price of coal, labor and oil, amounted to about 30 cents per 1,000 cu. ft. The order specifies that the new rates shall be effective for the duration of the war.

Part of Increase Asked Allowed New Jersey Company

The application of the New Jersey Gas Company, which serves Vineland, Landis Township, Gloucester, to increase its rates from $1.25 per 1,000 cu. ft. to $1.85 for the same amount of gas sold to domestic consumers, was dismissed recently by the board of public utility commissioners. The company in its application also asked to add a readiness-to-serve charge of 25 cents a month for every connected five-light meter as set forth in the report of the company.

However, the board will allow the company to file a new schedule of emergency rates, effective from Sept. 14, as follows:

Each connected customer shall pay a readiness-to-serve charge of 25 cents a month for gas served through a three or five light meter. For customers served through meters of larger capacity the monthly charge will be increased 1 cent for each one light increased above five. The company will be allowed to charge $1.65 for 1,000 cu. ft., instead of $1.85.

Essential Industries Finance Corporation to Be Organized

A company to be known as the Essential Industries Finance Corporation is shortly to be organized by a group of bankers to aid in financing public utilities and industries essential to the war.

Interests connected with the new company to be represented on the board of directors are the Chase Securities Company, Guaranty Trust Company, Central Union Trust Company, First National Bank, J. P. Morgan & Company, J. & W. Seligman & Company, E. W. Clark & Company of Philadelphia, the General Electric Company, Westinghouse Electric Company and the United Gas Improvement Company of Philadelphia.

This corporation will be incorporated in New York with an initial capital of $3,000,000, represented by $1,800,000 ten-year debentures, $1,000,000 stock and $200,000 paid-in surplus.

It is intended that the corporation, as loans are made by it to public utilities and other industries essential to the war, shall avail itself of the provisions of the War Finance Act by borrowing from the War Finance Corporation, rehypothecating the notes and securities received by it in respect of advances made.

It is also the intention that the capital of the Essential Industries Finance Corporation shall be increased from time to time as the business of the company expands.

The capital, in all probability, will ultimately reach $20,000,000, on which basis it will be able to borrow about $50,000,000 from the War Fi-

nance Corporation, thus making available $70,000,000 for loans to public utilities and other essential industries.

Maryland Fuel Administrator Writes Consumers to Use Mantle Lamps

The Federal Fuel Administrator of Maryland has sent a letter to every gas consumer in Baltimore urging the use of mantle burners. In addition to this the Consolidated Gas Electric Light & Power Company of Baltimore displayed the matter in a half-page ad in the Baltimore *Sun* of Sept. 15. The gas company is now carrying on a campaign for the elimination of open-tip burners. The letter sent out by the Fuel Administrator is given below:

BALTIMORE, MD., Sept. 10, 1918.
To Consumers of Gas:

The manufacture of gas requires large quantities of coal and oil. The demand for the further conservation of these fuels, in order to secure an adequate supply to meet the urgent needs of the nation at this time, necessitates a greater saving in the consumption of gas.

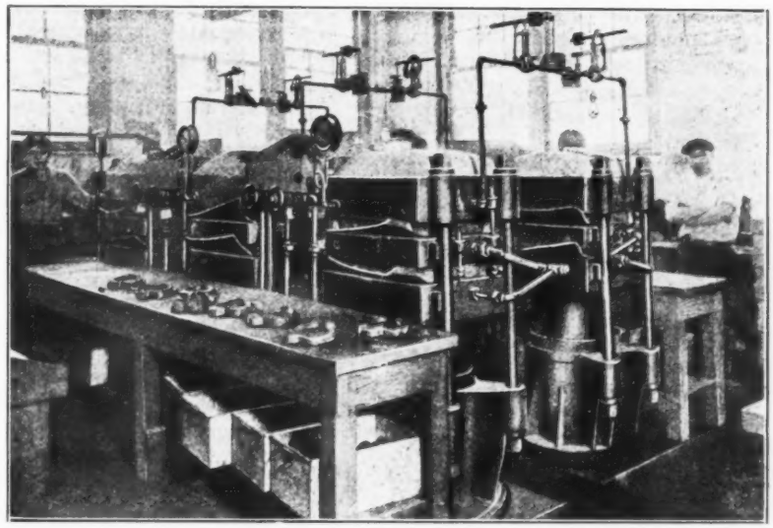
Since mantle burners consume less gas than the old flat-flame burners and give more light, the use of incandescent mantles will result in a material saving in gas consumption.

Combine patriotism and personal profit by using incandescent mantle gas lights.

Yours very truly,
F. A. MEYER,
Fuel Administrator.

Portland Company Withdraws Application for Decrease in Gas Standard

The Portland (Ore.) Gas & Coke Company recently requested the public service commission to dismiss its application for a decrease in the standard of gas, which it filed with the commission about a year ago. The company gives as its reasons that the Government is now taking up the question of fixing a standard for gas, and also that operating conditions have changed since the application was filed.



VIEW OF CHICAGO PLANT DEVOTED TO MAKING VULCANIZED HORSESHOE PADS

Gas Used in Vulcanizing Rubber Horse Shoe Pads

The above photograph shows part of the plant of the Fruin Drop Forge Company, 349 Root Street, devoted to vulcanizing rubber horseshoe pads for the Chicago police force. The vulcanizers are run by steam furnished by two 10 hp. high-pressure gas-fired boilers. This concern gets its gas supply from the Peoples Gas Light & Coke Company.

Princeton Utilities Files Increase Petition

A. O. Hassensall, trustee of the Princeton Utilities Company, has filed a petition with the Public Service Commission of Indiana, asking higher gas rates for Princeton. It is proposed by the petition that the present price of $1.25 per 1,000 cu. ft. be increased to $2 per 1,000, because of war-time increases in cost of fuel and other production factors. The petition also asks authority to increase the present monthly minimum rate from 50 cents to $1.

What the Coal Committee Made Possible in the Third Liberty Loan

Remember the monster tank Britannia that toured the country a few months ago, showing how it did things to the Germans? Well, that type of tank costs $25,000. And the United States is building a lot of them.

Liberty Bonds will pay for them.

When the Coal Committee of the New York Rainbow Division subscribed $10,606,800 in the Third Liberty Loan drive, they made it possible for the Government to order up 424 of the lumbering tanks, each to be equipped with three or four machine guns or small cannon, and still have $6,800 left. The heavy tanks now operate in fleets of a score or more, several such fleets attacking the enemy in the St. Mihiel offensive.

And the extra $6,800 enabled the purchase of gas masks for 567 of the infantrymen who follow up the tanks and are liable to meet a gas defense.

A New Gas Furnace

The novel features of a gas furnace described by A. C. Ionides at the British Institute of Metals are striking even when considered as separate and unrelated improvements in gas furnace design. Taken altogether as component parts of a system, they constitute a remarkable and promising development in the art of gas heating. Some eight years ago Mr. Ionides found that if a test tube was inverted over a petrol air gas flame issuing from a fine silica glass tube the gas continued to burn, and as the silica glass became hot the flame either disappeared or became invisible, and the character of the combustion altered. This suggested to him that if the waste gases in a crucible or other gas-heated furnace, instead of being carried away by a flue at the top could be passed downward again through a flue surround-

ing the inner lining of the furnace, great advantages might result. The first difficulty was that of establishing and maintaining a constant mixture. This was essential, for only by maintaining an exact ratio of gas and air could the desired condition of flameless surface combustion in the furnace be achieved. There are four main variables to be dealt with as regards mixture—the inlet pressure of the air, the inlet pressure of the gas, the variation in consumption of either air or gas that may occur in any given installation, and the variation in the quality of the gas itself. After four years these initial problems were effectively solved. To provide against variations in the mixture due to the varying pressures of the gas and air supplies, a device known as a mixture balance, or pressure balance, was introduced. This balance consists of a sensitive bell, the inside of which is subjected to the static pressure of the gas and the outside to the static pressure of the air, so that when the static pressure of the gas increases the flow of gas cuts itself off and the flow of air is increased; and, likewise, when the static pressure of the air above increases it shuts itself off and opens the gas correspondingly. Therefore, the pressure of gas and air are always held in a constant ratio whatever be the variation of either inlet pressure of gas or air, or the consumption. The next point was how to regulate the flow of mixture so as to maintain a steady temperature in the furnace. To effect this a particularly simple and ingenious arrangement for automatic regulation was adopted. It was observed that if the cross-section of the downward flues was restricted to a predetermined area the intake of mixture was regulated automatically by the temperature of the furnace. If the temperature increased, the mixture on entering underwent a great expansion, and the increased pressure in the furnace occasioned thereby checked itself the inflow of fuel and provided the elements of the most refined thermostat without any working parts. The fourth problem was to provide a means of checking continuously the quality of the mixture so as to be sure that the flameless combustion was being maintained. The plan adopted was to take a portion of the mixture through a bypass to an ordinary incandescent mantle, where the light would indicate the character of the mixture. If the meshes of the mantle are visible, it means an oxidizing mixture. If, however, the mantle is at its most brilliant point, the mixture will be very near the neutral point. On the other hand, if any unburnt gas is seen to escape from the mantle in the shape of a blue flame, the mixture will be a reducing one. It is easy, with this arrangement, to note at once any change in the character of the flame, and to make the necessary adjustment in the pressure balance. A furnace embodying these principles is stated to be very economical, not only of fuel, but also in the case of annealing furnaces for forgings. It is not uncommon for a large proportion of high-class forgings to have to be scrapped after annealing owing to scaling, and this waste, it is claimed, can be entirely prevented in the new furnace owing to the ease and certainty with which a reducing or oxidizing flame can be established and maintained.

Personal Notes

JOHN B. TONKIN, vice-president and general manager of the Peoples Natural Gas Company, Pittsburgh, Pa., was elected a member of the board of directors of the Pittsburgh Trust Company at a recent meeting.

C. M. DERBY, of Berkeley, Cal., has been appointed manager of the Fresno office of the Pacific Gas & Electric Company, in succession to W. L. Johnstone, who resigned on receiving the appointment of agent of the Pacific Mail Steamship Company in Shanghai, China. Mr. Derby has already begun his duties.

JOHN R. ELLIS, for some time manager of the Waxahachie (Texas) Gas Company, has resigned. Mr. Ellis is now in New York City, where he is connected with the Ohio Cities Gas Company.

H. R. ELLIS, who has been auditor of the Utah Gas & Coke Company, Salt Lake City, Utah, for the past two years, has resigned. Mr. Ellis leaves Salt Lake City shortly to accept the position of auditor with the Wisconsin-Minnesota Light & Power Company, with headquarters at Eau Claire, Wis. Recently the employees of the Utah company gave Mr. Ellis a farewell party at Saltair, at which time they presented him with a handsome traveling bag as a token of their esteem and good wishes for his success in his new field.

J. P. CASE, of Indianapolis, Ind., will succeed H. R. Ellis as auditor of the Utah Gas & Coke Company, Salt Lake City, Utah.

SAMUEL LINSCOTT, who has been employed by the gas department of the Twin State Gas & Electric Company, in Dover, N. H., has resigned to accept a position with the Atlantic Steel Corporation at Freeman's Point.

FRANK BUDD, formerly with the Coeur d'Alene Hardware Company, Wallace, Idaho, left Sept. 11 for Muncie, Ind., where he will take up his new position as assistant manager of the Muncie Gas Company.

G. M. JOHNSON, of Omaha, Neb., has taken up his responsibilities as manager of the Northern Indiana Gas & Electric Company at South Bend, Ind. Mr. Johnson is filling the vacancy made by the absence of C. S. Schlegle, who is in the service.

A. S. LANE, a director of the Meriden (Conn.) Gas Light Company, has been appointed a member of the Meriden board of apportionment and taxation.

HENRY CLAY DU BOIS, seventy-four years old, an employee of the Brooklyn Union Gas Company, Brooklyn, N. Y., died Sept. 19 at his home, 1795 Brooklyn Avenue.

THE WORCESTER (MASS.) GAS LIGHT COMPANY at its recent annual meeting increased the number of its directors from six to ten by the election of Louis H. Buckley, Paul B. Morgan, Charles G. Washburn and Burton H. Wright. The directors re-elected by the stockholders are A. George Bullock, Francis H. Dewey, Dr. Samuel B. Woodword, George Crompton, DeWitt Clinton and Willard B. Osborne. The stockholders also re-elected DeWitt Clinton treasurer and clerk of the corporation. The directors organized by the re-election of these officers: President and general manager, Willard B. Osborne; vice-president and general counsel, Francis H. Dewey; secretary, DeWitt Clinton.

GEORGE MCDONALD, for twenty-eight years connected with the Sherman (Texas) Gas Company, has been made manager of the Waxahachie (Texas) Gas Company, and has already assumed his new duties. Mr. McDonald succeeds J. R. Ellis.

H. A. STOCKTON has been appointed manager of the Ocean County Gas Company, of Toms River, N. J. Mr. Stockton succeeds N. A. McClary, who has resigned.

A. L. HICKMAN, of Aurora, Neb., since Sept. 1, has assumed the duties of general manager of the Public Service Company, of York, Neb.

Societies and Associations

THE MICHIGAN GAS ASSOCIATION at its annual meeting in Detroit elected the following officers: President, Samuel Ball, Bay City; vice-president, E. G. Campbell, Benton Harbor, and secretary-treasurer, A. G. Schroeder, Grand Rapids.

THE ILLUMINATING ENGINEERING SOCIETY has completed the program for its annual convention. The entire technical program will be confined to one day instead of four days, as was the custom before the war. All presentations and discussions will therefore be in condensed form. The evening of Oct. 10 will be given over to a dinner-meeting, at which speakers of national prominence will discuss questions pertaining to the war and illumination. The tentative program for the day session is as follows: *Morning Session*, 9.30 *a. m.*—Registry and assembly; annual business meeting; presidential address, G. H. Stickney; report of committee on progress, F. E. Cady; report of committee on nomenclature and standards, A. E. Kennelly; statement on behalf of U. S. National Committee of International Commission on Illumination, E. P. Hyde; New York State Automobile Headlight Law, F. M. Hugo; report of committee on automobile headlighting specifications, C. H. Sharp; report of committee on lighting legislation and statement concerning work of divisional lighting committee, L. B. Marks; statement concerning War Committee of Technical Societies, D. W. Brunton; report of Committee on War Service, P. S. Miller; four-minute Liberty Loan talk. *Afternoon Session*, 2 *p. m.*—"Lighting of Cantonments," Bassett Jones; "War-time Lighting Economies," Committee on War Service; "Light as a Manufacturing Stimulant," W. A. Durgin; "Protective Lighting," Edmund Leigh; "Influence of Lighting Curtailment Upon Accident Hazards," R. E. Simpson; "Plan for Insuring Quality of Industrial Reflectors," Ward Harrison.

Lewiston Rates Raised 15 Cents

The public utilities commission announced its decision Sept. 18 on the proposal of the Lewiston (Me.) Gas Light Company to increase its rates 30 cents per 1,000, rejecting the proposed schedule and authorizing an increase of 15 cents, effective Sept. 23, 1918, and continuing until six months after the close of the war, when the old schedule will again become operative, unless otherwise sooner ordered. The schedule containing the 30-cent increase was issued Aug. 23, and the commission started an investigation on its own motion.

Increased Rate Announced for Austin

A. T. Knies, manager of the Austin (Texas) Gas Light Company, in announcing an increase in rates, called on the city council recently and read them statements to show that the increase asked is very reasonable and that the gas company is standing more than half of the increased cost in gas producing material, even after the new rates with estimated increase go into effect.

The following are effective Sept. 1:

	—Rate— New	Old
Gross, first 10,000 cu. ft.	$1.60	$1.50
Discount	0.15	0.20
First 10,000 cu. ft., net	1.45	1.30
Second 10,000 cu. ft.	1.20	1.00
Over 20,000 cu. ft.	1.10	0.90
Minimum bills	0.75	0.50

The increase in revenue from application of new rates to 1917 sales would give us an increase of $18,449.60 and increase in revenue from application of new rates to estimated sales for the next twelve months will amount to $19,250.

The new rates represent an increase of less than 12 per cent. Mr. Knies stated that it is either necessary to increase the rates or impair the efficiency, and that it is ruinous to any industry to impair its efficiency. The $42,370 increased cost to the company is for gas producing materials only, and does not include meters, pipes, labor, etc.

$1.30 Asked for Gas in St. Joseph, Mo.

V. L. Elbert, general manager of the St. Joseph (Mo.) Gas Company, notified Charles L. Faust, city counsellor, recently that an application had been filed with the State public service commission in Jefferson City for an increase in the net price of manufactured gas for St. Joseph from $1 to $1.30 per 1,000 cu. ft. Mr. Elbert said $1.30 is necessary to prevent the company from losing money.

No application is made relative to natural gas. St. Joseph is receiving no natural gas now, owing to a break in the main crossing the Missouri River near Leavenworth, and there is no indication that the main will be repaired soon. The question of replacing the main is in the hands of the Federal court, and there is little hope of receiving any more natural gas in St. Joseph this year.

Construction Notes

New Ammonia Concentrating Apparatus to Be Installed at Springfield

The Springfield (Mass.) Gas Light Company has awarded a contract for a new 48-in. ammonia concentrating apparatus to the Gas Machinery Company, of Cleveland, Ohio.

The railroad company is going to occupy the ground where the present concentrating apparatus is located, and as the old apparatus is practically worn out, it was decided to install a modern machine instead of attempting to move the old one.

Brainerd Company Completes New Gas Unit Installation

The Brainerd (Minn.) Gas & Electric Company has completed the installation of its new gas unit, a duplicate of the first one installed. This now gives the gas plant reserve power and provides for any contin-

gencies or breakdowns and gives greater guarantee of continuous service.

A. B. Willing, superintendent, has men installing gas stoves and laying additional mains.

Improvements Being Made at Muskogee

Arrangements Also Being Made for Additional Gas Supply

Improvements in the distribution system of the Muskogee (Okla.) Gas & Electric Company are now well under way, and an increased gas supply for Muskogee for the coming winter is practically assured.

Contracts have been let for 2 miles of 10-in. pipe and 2 miles of 8-in. pipe, to be used in laying a new belt line partially around the city. Priority orders have ben secured for the material, which is now being manufactured in the East.

As soon as it is delivered a force of men will begin work laying the line, so it may be in operation before the cold weather.

The connection with the Eram field is now practically half completed, and will be finished before the cold weather. It will turn approximately 6,000,000 ft. of gas daily into the mains of the Oklahoma Natural Gas Company, which sells gas to the Muskogee company. Connections with Western fields, to help supply Western cities of the State, also are being arranged.

New York and Queens Company Will Extend Mains

Maynard H. Spear, manager of the New York & Queens Gas Company, Brooklyn, N. Y., recently announced that the company had accepted the order of the public service commission to extend its mains from Bayside to Little Neck and Douglaston. This is the culmination of a long series of disputes between the company and the residents of Douglaston. William H. Van Steenbergh, representing the latter, carried the case to the United States Supreme Court.

The contention of the company throughout has been that its refusal was based upon a lack of funds. Manager Spear states that he has requested the public service commission to call a conference for the purpose of deciding where money, material and labor for the undertaking are to be obtained.

Milwaukee Company Will Only Make Necessary Improvements

The Milwaukee (Wis.) Gas Light Company recently announced that in compliance with the request of the Capital Issues Committee it will make no further improvements other than those of vital necessity. Curtailing all unnecessary extensions will not interfere with service to regular customers, as this will be facilitated by the concentration of available labor and material on equipment already on hand.

The Blackstone Valley Gas & Electric Company reports July gross $201,055, increase $15,875; net $61,488, increase $20,293; surplus after charges $35,332, increase $19,247; twelve months' gross $2,214,840, increase $350,143; net $678,746, decrease $2,797; surplus after charges $366,855, decrease $18,011.

The American Gas & Electric Company declared a quarterly dividend of 2½ per cent on the common stock, payable Oct. 1 to stockholders of record Sept. 20; also, the regular quarterly dividend of 1½ per cent on preferred stock, payable Nov. 1 to stockholders of record Oct. 18.

The Quinton Oil & Gas Company, Appleton, Wis., capital stock increased from $50,000 to $100,000.

The C. W. Underwood Oil & Gas Company, Columbus, Ohio, filed articles of incorporation. The incorporators were C. W. Underwood, C. H. Taylor, E. A. Johnson, J. R. Tingle and W. V. Rounsavell. The firm is capitalized at $5,000.

The Worcester (Mass.) Gas Light Company's annual report showed that 1,172,708,000 cu. ft. of gas was sold during the year for $1,065,248.13. The income from residual products was $65,810.36. The company used 55,000 tons of gas coal, 10,000 tons of coke and 1,581,700 gal. of gas oil. The largest sale of gas for any one day was Dec. 29, when 4,369,000 cu. ft. was sold. The smallest day was April 21, when 2,289,000 cu. ft. was sold. The company increased its service mains 3.2 miles, making a total of 223 miles. The company has assets of $4,505,182.07, an increase of $307,044.26 during the year. It has a surplus of $165,102.85. While the profits to June 30 were not as large as in previous years, they are considered satisfactory to the officials for war-time. The sales of gas increased 6.8 per cent over the previous year.

The Charlestown Gas & Electric Company reports to the Massachusetts Gas Commission for year ended June 30:

	1918	1917
Gross	$594,425	$530,279
Expenses	484,568	371,580
Net	$111,857	$158,699
Dividends	102,000	102,000
Surplus	$9,857	$56,699

The Columbia Gas & Electric Company and subsidiary companies reports August gross $779,680, increase $59,752; net $512,727, increase $30,445; surplus $151,797, increase $22,323; eight months' gross $7,660,976, increase $510,961; net $5,192,553, increase $234,427; surplus $2,338,737, increase $183,066.

The Pacific Gas & Electric Company reports July gross $1,934,832, increase $379,852; net after taxes $605,116, increase $29,368; surplus after charges and preferred dividends $121,364, increase $31,658; twelve months gross $20,993,111, increase $1,777,934; net after taxes $7,438,252, decrease $573,481; surplus after charges and preferred dividends $1,636,676, decrease $796,973.

The United Gas Improvement Company directors have declared a regular quarterly dividend of 2 per cent, payable Oct. 15 to stock of record Sept. 30.

The National Fuel Gas Company declared quarterly dividend of $2.50 per share, payable Oct. 15 to stockholders of record Sept. 30.

The Lenox Oil & Gas Company, Pittsburgh, Pa., capital increased from $200,000 to $500,000.

The Ranger Gas & Oil Company, Wilmington, Del., capital $500,000. Incorporators, Frank A. Hoffman, Eugene Wallinger, D. F. Reinhold, all of Chicago.

The Skedee Oil & Gas Company, Gary, Ind., capital $95,000; to drill and operate oil and gas wells. Directors, Hoy D. Davis, Peter Chase and John M. Stinson.